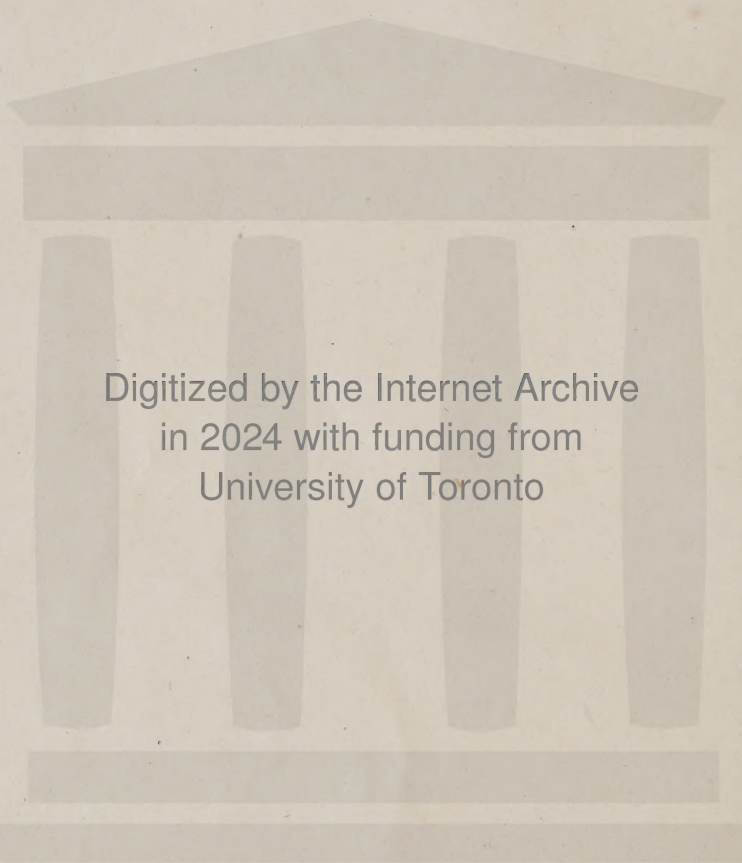




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THE

CANADIAN AGRICULTURIST;

A MONTHLY JOURNAL

OF

Agriculture, Horticulture, Mechanics and General Science, Domestic Economy, &c.



"Profit of the earth is for all; the King himself is served by the field."—ECCLES. v. 9.

GEORGE BUCKLAND,
WILLIAM McDOUGALL,

EDITORS AND
PROPRIETORS.

VOL. I.

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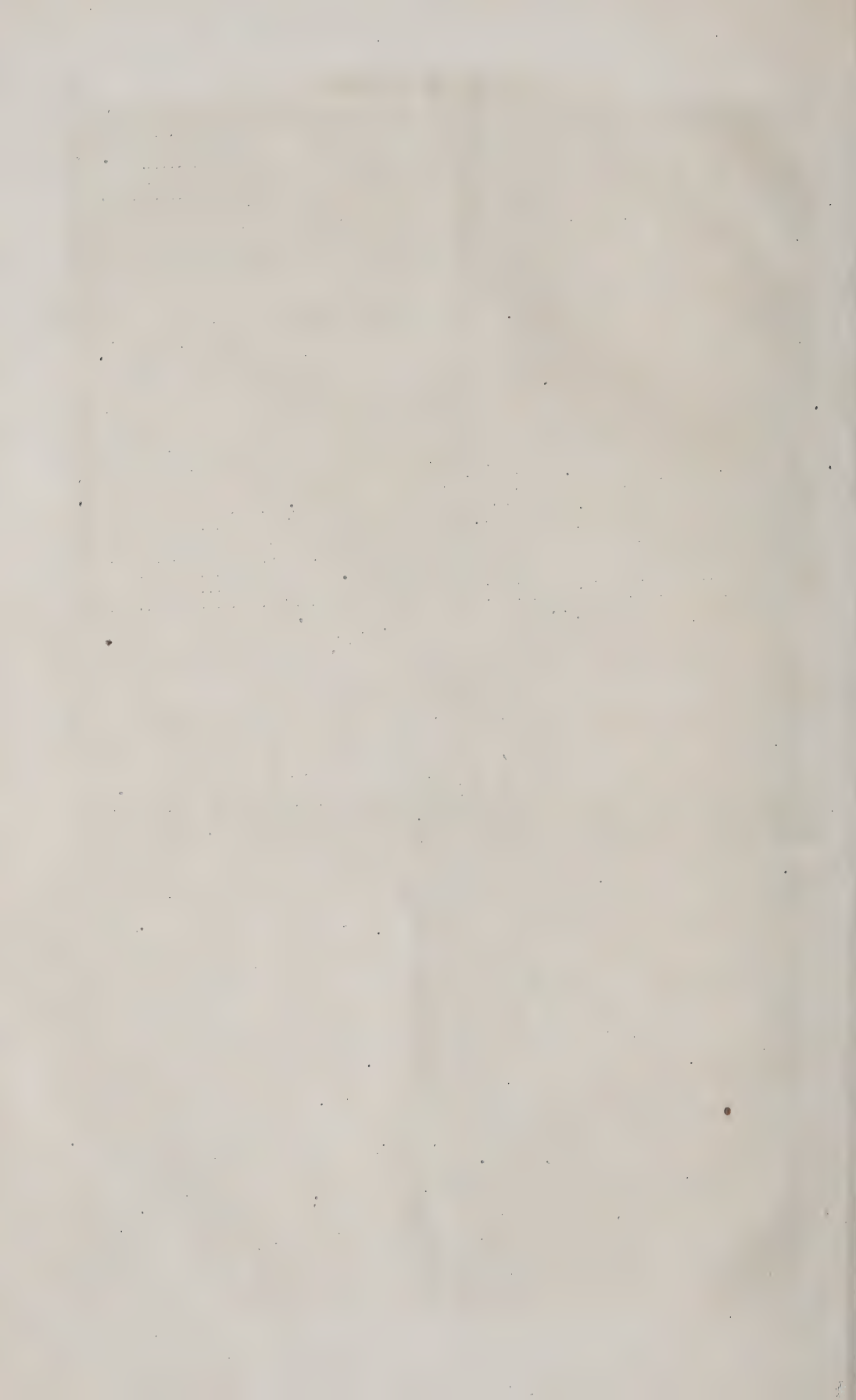
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CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. 5, ix.

GEORGE BUCKLAND, }
WILLIAM McDUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, JANUARY 1, 1849.

No. 1.

☞ This number of the *Agriculturist*, and numbers 2 and 3, will be sent to all subscribers, who have paid for the year 1848, without further charge. The proprietors adopt this course, to make up the deficiency in the volume for the year just ended. The remaining 9 numbers of the volume for 1849 can be had for 3s. 9d., if paid before the 1st March next. Subscribers, who wish to discontinue, need not, therefore, return the paper, as it will not be sent beyond the third number, unless re-ordered and paid for. Three and nine pence being an inconvenient sum to remit by mail, those who intend to continue their patronage may leave the amount with their Post-Master, taking a receipt, who will, no doubt, undertake to remit to us, as soon as he gets a sum which he can enclose in a letter. Post-masters will get a copy of the *Agriculturist gratis*, as some compensation for their trouble; and we trust they all, without exception, will take an interest in promoting the success of our publication.

AGENTS.—We are not aware that we shall employ any travelling agents, at all events not more than two, this year. Any person, however, may act as a local agent. We hope that all those who have heretofore acted as such, will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending four subscriptions. Those sending twelve and upwards will be supplied at 3s. 9d. per copy.

PROSPECTUS OF THE CANADIAN AGRICULTURIST, FOR 1849.

ON the first of January, 1849, No. 1 of *The Canadian Agriculturist*, is published in a new and improved form. It consists of thirty-two pages royal octavo, printed on fine paper, in a superior style, with illustrations, and issued monthly.

Principal Editor, MR. GEORGE BUCKLAND, Secretary of the Provincial Agricultural Association, Member of the Royal Agricultural Society of England, and Author of the Society's Prize Essay on the "Farming of the County of Kent," &c. &c.; assisted by MR. W. McDUGALL.

The Canadian Agriculturist will embrace the following departments:—

Agriculture:

Consisting of original and selected articles, correspondence, &c.; a monthly digest of British and American Agricultural Literature and Intelligence, Markets, &c. Promises of assistance in this department have been received from distinguished Agriculturists in the British Islands and the United States.

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Embracing original and selected articles on the principles and application of mechanical science generally; more particularly to agricultural implements, illustrated when necessary by appropriate engravings. Natural History and General Science will receive some share of attention, more particularly with a view of awakening a spirit of rational enquiry in the minds

of the young, with special reference to the actual wants of the Farmer, Gardener, and Mechanic.

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In a word, the Editors will strive to present to the Canadian public a work of substantial usefulness, possessing on the whole, a permanent utility; and, by studiously avoiding all topics and reflections of a mere party character, they hope to receive the cordial good wishes and support of all who have at heart the welfare and advancement of their country. The proprietors have determined to spare no reasonable pains to make *The Canadian Agriculturist* in appearance, and in real usefulness, superior to any work of the kind now or heretofore published in Canada. The first three numbers will be sent to all paid subscribers to the volume for 1848, in order to make up for the deficiency in that volume, caused by circumstances with which subscribers have been made acquainted. The remainder of the next volume will be sent to the above subscribers upon their remitting to this office 3s. 9d., between this and the first of March. 1849.

TERMS:

Single subscriptions, *One Dollar*, in all cases to be paid *in advance*. Agricultural Societies and Clubs, taking twelve copies and upwards, will be charged 3s. 9d. per copy.

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Toronto, January, 1849.

1-6m

FRAER'S PATENT CHURNS.

THE Subscriber has received an assortment, from John Gamble, of Dundas, the manufacturer, of the above Churns, of which a full supply will be kept constantly on hand, at his old stand on King Street, a few doors East of the Market.

G. MONRO.

Toronto, January, 1849.

1-AM

REVOLVING WOODEN AND COIL-TOOTH HORSE RAKES.—The Subscriber has received a large assortment of Horse Rakes, which will be sold at his Establishment, either for Cash or approved Notes.

G. MONRO.

Toronto, January, 1849.

1

AMERICAN SCYTHES, FORKS AND HOES.—A very large assortment of the above articles for sale, wholesale and retail, by the Subscriber.

G. MONRO.

January, 1849.

1-2m

HUSSEY'S REAPING & MOWING MACHINES.—The Subscriber has made arrangements with the Patentee, by which the above articles, of a superior quality, may be supplied to the Canadian Farmer.

G. MONRO.

January, 1849.

1-2m

THE TORONTO

Carriage and Light Waggon Manufactory,

130, KING STREET WEST,

(Established—1832.)

**OWEN, MILLER & MILLS,
FROM LONDON.**

EVERY description of Carriage, Light Waggon, and Sleigh, kept on hand for sale, and built to order, of any pattern.

Painting, Trimming and Repairing, done in the best manner, on reasonable terms, and with the utmost despatch.

FOR SALE—Lace, Patent and Plain Axletrees, Springs, Lamps, Bands, Patent Leather, and other Carriage Trimmings.

January 1, 1849.

1

NEW CARRIAGE FACTORY.

WILLIAMS & HOLMES,

HAVE REMOVED their *City Carriage Repository*, to 142, YONGE STREET, where they have started a Manufactory in all its branches. Parties wishing to purchase for Private or Public Business, are requested to give them a call before purchasing elsewhere, as their facilities are such as to enable them to manufacture cheaper than any other Establishment in Toronto.

Toronto, January 1, 1849.

1-tf.

N.B.—The public are particularly invited to an inspection of their Lumber and other Building Materials, as none but the very best will be used.

CANADIAN AGRICULTURIST.

VOL. I.

TORONTO, JANUARY 1, 1849.

No. 1.

TO OUR READERS.

IN commencing a new, and, we trust, an improved Series of the *Agriculturist*, a few words explanatory of the principal objects of the work will be deemed as desirable by our subscribers as ourselves.

The designation, "*Agriculturist*," sufficiently denotes the general character which the work is meant to sustain. Agriculture, both scientific and practical, will occupy at least a moiety of its pages. Its conductors will endeavour to place before their readers whatever discoveries or improvements may be made, either in Europe or America, in relation to this confessedly most important and useful of the arts. As the great bulk of our farmers are either directly from the British Islands, or the descendants of those who were, they will no doubt regard with peculiar interest a monthly digest of Agricultural information from our Father-land, obtained from authentic sources—public journals, reports and private correspondence. Nor shall we remain unmindful of the progress our American neighbours are making in this and kindred arts; but shall cull from their various periodicals, whatever promises to interest and instruct our readers. Beside, we expect to receive occasionally from that and other quarters, original communications from the pens of distinguished agriculturists.

The word "*Canadian*"—thus giving to our work the name "*Canadian Agriculturist*"—at once expresses our desire that the work should assume a distinct and *national* character. We shall, therefore, not only treat of the general principles of agriculture, which are equally applicable to all countries and climates, and place before our readers discoveries and improved methods of practice, come from whom and where they may; but we shall aim especially to do everything in our power for the agricultural advancement of our own country.—Canada and Canadian interests, so far as they are comprised within the legitimate and professed objects of our paper, shall have our first consideration. In aiming to do this, we earnestly invite and reckon on the co-operation and communications of our far-

mers, and all others who feel an interest in promoting the agricultural and general prosperity of our naturally favored land. We feel quite confident that this country possesses the requisite elements of national greatness, and that one of the principal means, if not *the means*, for accomplishing that patriotic object, is the development of her immense agricultural resources. Unless we mistake entirely the signs and temper of the times, Canada is assuming a new and improved position; the present depression will prove but temporary, and a bright and encouraging future awaits the skilful and persevering industry of our population.

Feeling as we do an interest in the well being and prosperity of every portion of our wide-spread Empire;—in the diffusion of useful knowledge and the inestimable blessings of civil and religious liberty, guaranteed by British Institutions;—we cannot but regard with the strongest feelings of interest and attachment that particular portion of the Earth's surface on which we have resolved as the land of our adoption. From the peculiar position of the Mother Country—possessing at the same instant a redundancy both of capital and labour, Emigration it would seem must continue to proceed in an increasing ratio. Canada contains an ample field for the profitable employment of both: and we shall consider it our duty to lend our humble aid to so desirable and important an object. The condition and capabilities of this country—particularly Western Canada—are, we know, but very imperfectly understood at Home; whilst the most active means have been and are still employed by interested and influential parties, for setting forth the advantages real and supposed, of the southern and more distant colonies. As our periodical will have a circulation in the Mother Country, we shall always be glad to answer any enquiries that may be sent us from thence, free of expense; and we invite our Canadian correspondents to furnish us with authenticated facts and suggestions in reference to this important subject.

In the mechanical department we shall study to make our readers acquainted with such new inven-

tions of improved machinery as appear to possess practical merits, and adapted to the wants and means of the farmers of this country. We hope to receive encouragement enough to enable us to illustrate when necessary both this and other portions of the work, by suitable Engravings. This department will not be exclusively confined to agricultural implements and machines, but will embrace more or less of mechanics in general, adapted to the comprehension and wants of our practical artisans. We shall look with a friendly eye on our infant manufactures, the progress of which we shall always feel happy to promote and chronicle.

We have resolved on devoting a limited space to *Horticulture*, a sister art, depending with agriculture on common principles. In all our well settled districts, particularly in the vicinities of rising towns, the subject of gardening in its various departments should receive increased attention. Whilst fruits and vegetables minister largely to man's physical necessities and comfort; shrubs and flowers ornament his dwelling, and tend to refine and elevate his taste. Although in a new country the necessities and substantial must of course be first sought and secured; yet there can be no sufficient reason why in the progress of things, the beautiful and ornamental should be entirely neglected. The externals or appendages of a home, have much more to do with the education of its inmates—particularly of the young—than is commonly imagined. The Almighty in his wisdom and goodness, has created a beautiful as well as useful world. Man by his intelligence and industry avails himself of the latter to supply his animal wants; but too frequently remains insensible to the former. The cultivation of flowers is particularly suited to the female sex, being alike promotive of the health of the body and the refinement and purity of the mind. Even on subjects of the gravest importance, we are taught by the highest authority, to look upon flowers as affording an illustration of a paternal and universal Providence. So true it is that nature, when we study her aright, ministers abundantly both to the wants of the body, and the yet higher and more enduring wants of the mind.

We also hope to devote a page or two to general science; more particularly to such portions of Natural History as have an immediate connection with rural affairs and the pursuits of the horticulturist. Contributions of this nature will always be thankfully received. Our object is not so much to give lengthened and systematic papers on any one branch of physical science, as short and simple illustrations of the more common natural phenomena of every day life. We think this will be an acceptable mode to a large portion of our readers; and be the means of

inducing a spirit of rational inquiry, and of strengthening the valuable habits of patient investigation and correct observation. It may also do something towards lessening the force of those influences which are unfavorable to self-improvement, and check the tendency to indifference and low habits. The sincere and intelligent lover of nature can never, we think, be essentially vicious or degraded. The habit of his mind has an ennobling as well as a practically useful tendency. In tracing therefore the sequences of nature, we shall not consider ourselves precluded from using on proper occasions the appropriate reverential expression. We hope in some degree to be able to rouse the minds of our country youth to a perception of the interesting sources of knowledge by which they are constantly surrounded; to point out to them the means whereby they may find

"Tongues in trees, books in the running brooks,
Sermons in stones, and good in every thing."

Our arrangements will also include information on those subjects which are usually understood as embraced by the comprehensive term,—Domestic Economy. We hope thus to be able to interest our fair readers, the mothers and daughters of our country, whose influence is indispensable in giving to society a high and correct tone of feeling. Facts and suggestions in reference to Home Education;—the physical, mental and moral training of children, and in short whatever can impart comfort and rational interest to the family circle, and make the fire-side attractive, will receive a share of attention.

It is almost unnecessary to add, that we shall scrupulously study to keep our pages clear from party politics and polemical theology. As we shall write for the people of Canada,—for the common good of our common country, we can know of no such distinctions as colour, party, race or creed.—Our readers must judge of the sincerity of these professions by the character of our deeds.

STATE OF AGRICULTURE IN IRELAND.

The Royal Agricultural Improvement Society of Ireland has commenced the publication of a quarterly journal, including reports, essays, and transactions. The first number is a highly interesting and creditable production. We hope to receive this publication regularly, after the opening of navigation in spring, together with the journals of the English and Scotch Societies, which are too bulky to be sent through the Post Office; and we shall not fail to lay before our readers a condensed account of such portions of their contents as appear suitable to this country. The Irish journal contains in its opening

paper a very interesting account of the agricultural and industrial resources of the county of *Fermanagh*, which consists of 475,195 acres, 46,755 being under water. Population, in 1841, was 154,419 souls. The surface generally is undulating on the northern boundary—approaching the mountainous; subsoil porous—frequently requiring deep draining, which is but little attended to. Better cultivation, enlarging the fields, and straightening the fences, a larger culture of wheat and grain crops, and more attention to the breeding and management of live stock, with the preservation and proper application of manure, appear to be the principal desiderata to the advancement of the agricultural interest of this county, as well as the country generally. Public attention, however, is being directed to these matters in good earnest; so that a well-grounded hope may now be entertained for the amelioration of that unhappy but generous and warm-hearted people. The following extract from the Editor's preface is as correct as it is cheering:—

“Too true it is, the country has been, and still is, deeply afflicted; but in her fertile soil and genial climate; in her unappropriated water-power—more than equal in amount to the whole mill-power of England—in her mineral wealth, hitherto almost unsurpassed; in her fisheries, when by safety-harbours and curing-stations, they shall have been rendered available; and in the industry of her enduring children, when duly fostered; she possesses resources which, called into action, cannot fail to raise her from her present prostrate condition, and secure for her a degree of prosperity and happiness, to which she has unhappily been too long a stranger.”

ON THE DOMESTICATED ANIMALS OF THE FARM.

NO. I.

We propose devoting a series of papers to a popular and practical description of the various breeds of the domesticated animals. Our object will be to compress as much interesting and useful matter as possible within our necessarily restricted limits. Although the subject of improving the live stock of Canada has for some time occupied the attention of the more enterprising, and the result is our possession of some really fine specimens of the improved breeds; including horses, cattle, sheep and swine: yet it must be acknowledged that our farmers generally are much behind in these very important matters, and as a consequence, the real progress of the country in the acquisition of wealth becomes seriously impeded. If the farmers of Canada would turn their attention in right earnest to the improvement and better management of stock, instead of our being large and constant importers of tallow, hides, &c., this country would soon be in a condi-

tion to export these articles extensively; and they would always command a remunerating price in the British markets.

Before we proceed to a description of the different species and varieties of live stock belonging to the farm, it will be an advantage, in order to treat the subject somewhat systematically, to take a general view of the animal kingdom. In doing this we shall make frequent use of Professor Low's admirable introduction to his valuable work on “*The Domesticated Animals*,” to which, as well as other undoubted authorities, we shall frequently refer throughout this series of papers. Our object is not so much originality as practical utility; and while we hope to instruct our readers generally, by awakening a spirit of curiosity, and strengthening the habit of correct observation, we shall endeavor to keep in constant view the condition and practical wants of this country.

Life as it exists in connection with organic structure, admits of two grand divisions,—animal and vegetable. The distinction between a stone, a tree and a horse is obvious at once, even to a child.—The stone is a mass of mere inert matter, possessing no organs, therefore requiring no food; and it increases in size simply by the external deposition of fresh matter under the influence of mechanical or chemical forces. In short the stone is entirely destitute of the wonderful and mysterious principle denominated *life*; by the possession of which the plant and animal are mainly distinguished from the mineral. The tree is a living organised body, dependent on the soil and atmosphere for nutrition, fixed to one spot of earth, and unendowed with the faculty of sensation. The horse is a living organized body, but differs from the tree by possessing sensation and the power of locomotion. The scientific distinction between the highest forms of vegetable and the lowest of animal life, may not in some instances be very obvious; yet upon the whole the differences are so great and palpable between the two kingdoms, that we are in little danger of confounding them. In both, amidst the countless species, there appears a plan of progression from simpler to higher forms. As we ascend the scale to beings of higher organic structure, we meet with a more complicated organization; and with higher and increasing wants there are invariably found ample means arranged for their supply.

Confining our observations to the animal kingdom, the number of species it contains must be as astonishingly great. Some thousands have been already described by scientific observers, while an extensive field for exploration yet remains. The microscope, with its modern improvements, has opened up a completely new world of animated

beings; both earth, air, and sea have been shewn to sustain myriads of sentient, although to the naked eye invisible existences; and every leaf and drop of water nourishes a numerous empire instinct with life and enjoyment.

In order to arrange or classify the multitudes of animated beings already known to naturalists, they are first separated into groups; each group having a number of individuals possessing in their main features a common character. These groups, or kingdoms, are again divided into classes and orders, which likewise are further reduced into genera and species. When we come to treat of the different breeds of the domesticated animals, we shall have reached the lowest division, or varieties; that is animals agreeing in specific character, and differing only in such minor points as observation and experiment have shewn to be produced by climate, food, and general treatment. These are considerations of the first importance to the practical breeder and farmer. Cuvier, the illustrious French anatomist, formed a system of classification several years ago, which has been, with some slight modifications, very generally adopted. The whole animal kingdom is arranged under four grand divisions. (1) *The Radiata*; (2) *The Articulata*; (3) *The Mollusca*; (4) *The Vertebrata*. We will briefly illustrate this arrangement by some familiar examples.

The *Radiata*, or radiated animals, are so denominated from their general appearance; their organs proceeding from a centre like rays of light. They are the lowest in the scale of animal organization, having a nervous system of the most rudimentary kind; in cases where it has been observed, it was found to consist only of a few simple fibres.—Many species of this large group are invisible to the naked eye; but by the aid of the microscope they are found to inhabit the waters in countless myriads. They appear admirably provided with organs adapted to their various modes of existence; and in such whose habits have been observed, the strong prey upon the weak. Some of the species, as the sponge and coral, seem fixed, like a plant, to a particular spot; while others, as the *Medusæ*, float upon the waters of the ocean, occasionally tinging the colour of its surface over hundreds of miles. The well known star-fish, so frequently seen on the sea coast, after the receding of the tide, affords a familiar example of a higher species of this division of animated nature.

The *Articulata*, or jointed animals, includes many numerous groups of various sizes and appearance, from the hosts of invisible animalcula inhabiting the waters, to the vast tribes of insects with which both earth and air everywhere abound. In this division are also included the *Crustacea*, or such as possess

a horny covering to protect the softer parts of their bodies, held together by joints, so as to allow free motion to the animal. Examples may be seen in the crab and lobster.

The *Mollusca* have soft bodies and the power of secreting a calcareous substance, which by hardening into a shell, forms an admirable protection. Of this endlessly diversified group the oyster and mussel afford familiar instances; while ascending higher in the scale, the cuttle fish may be mentioned, which is endowed with the singular function of emitting a dark thickish fluid for, it would appear, the double purpose of seizing its prey or escaping from its enemy.

We next come to a still higher division of the animal kingdom, the *Vertebrata*, including animals possessing a spine, and a more extensively developed nervous system, by which a more intimate connection is formed with the external world. In the higher forms of life belonging to this division, the nervous system expands into a true brain, extending from the head through the vertebrae, which constitute the back-bone. The *Vertebrata* are usually arranged by naturalists under four divisions.—(1) *Pisces*, or fishes; (2) *Reptilia*, or reptiles; (3) *Aves*, or birds; (4) *Mammalia*, or animals which suckle their young. The whole of these animals have an organization admirably adapted to their various wants, and the external condition in which they are placed.

Fishes are cold-blooded animals, whose temperature is varied but little above that of the element in which they live. Their bones are soft and cartilaginous; they possess the singular property of altering their specific gravity by means of an air bladder which they can either contract or expand, and thus are enabled to rise or sink at pleasure. Fish are exceedingly voracious; a constant warfare is going on in the waters, the strong devouring the weak.—This principle of nature, when rightly understood in the spirit of an enlarged philosophy, presents no difficulty in regard to our conception of creative goodness. The whole system of nature is one of mutual dependence and nicely adjusted balancings; the result being upon the whole most obviously favorable to the enjoyment of sentient beings.

The group of *Reptiles* contains creatures of a great diversity of form and modes of life. Some in their first stage living in water, breathe like fish by gills; but on becoming inhabitants of the land, lungs are developed;—while a few retain both, thus becoming adapted to either land or water, and hence designated amphibious. As common examples of the class *Reptilia*, may be mentioned the frog, toad, lizard, crocodile, and all the varieties of the serpent tribe, some of which secrete a virulent poison which

they are enabled to eject by a simple apparatus.—The whole of this class of creatures are cold-blooded, and possess a languid circulation.

The class *Mammalia* comprises a large number of animals of very diverse forms and habits, mostly inhabiting the land, but some live wholly in water; while others seem adapted to both conditions indifferently. As they all bring forth their young alive, they are designated, viviparous; and from having the function of secreting milk for their young, arises their distinctive appellation. This extensive class has been divided by naturalists into several groups, or orders, which our limits will only allow us barely to enumerate.

(1) The *Cetacea*, or whale tribes: although inhabitants of the water, yet they breathe by lungs, and bring forth alive and suckle their young. The whale, therefore, does not properly belong to the class of fish. It is a warm-blooded animal, sometimes of stupendous size, inhabiting the colder seas, being eased in a thick covering of fat called blubber, which besides yielding a large quantity of valuable oil after the animal is dead, is of the greatest use to it while living, enabling it to retain the necessary degree of animal heat in the coldest medium in which it can be placed.

(2) *Ruminantia*, or such animals as return to the mouth the coarsely bruised food that has passed into the stomach, to be again subjected to mastication; a process usually called *chewing the cud*.—Animals of this order subsist solely on vegetable food, admit generally of domestication, and are of the greatest utility to man. The camel is admirably adapted for traversing arid sands, hence it has been designated “the ship of the desert;”—while the goat, the sheep, and the ox have accompanied man from the earliest periods of civilization, forming one of the chief sources of his wealth, and furnishing him with food and clothing. “The very species have been subjected to our will; they till the ground for our support, and bear our burdens; they yield us milk, and hair, and wool; and finally, they render up their bodies for our food, and their skins for our covering.”

(3) *Pachydermata*, or thick-skinned animals, comprehends many of the largest, and some of the most useful races. Among the former may be mentioned the elephant, the rhinoceros, and the hippopotamus, (river-horse); while the latter contains the horse, the ass, and the hog, which have existed in a state of domestication from the very earliest records of our race.

(4) *Edentata*, or animals devoid of cutting teeth. In this division may be instanced the sloth, armadillo, and the ant-eater; likewise that most singular

animal of New Holland, the duck-bill, which was for a long time regarded as a bird.

(5) *Rodentia*, or gnawing animals, some of which are exceedingly troublesome and injurious, and incapable of domestication, as the rat and mouse.—Others are naturally timid and shun the presence of man, as the hare and squirrel; while several exhibit extraordinary instinct in constructing their dwellings, as for instance the beaver; and many remain in a state of torpidity, as the dormouse, during winter.

(6) The *Marsupialia*, or marsupial animals, characterised by having a pouch attached to their abdomen, in which the young find both food and protection. This is a very singular class of animals, abounding in New Holland; the kangaroo and opossum being characteristic specimens.

(7) The *Carnivora*, or flesh-eating animals, hence commonly denominated beasts of prey. This order is exceedingly numerous; including seals and walruses, which are as destructive in the ocean as other are on land. The dog tribe, comprehending wolf, jackals, and foxes; also bears, racoons, weasels, the sanguinary family of cats; the lion, tiger, panther, &c. are all included in the order carnivora.

(8) *Insectivora*, animals that live principally on insects. Familiar examples may be seen in the shrew, the hedge-hog, and the mole. As this order frequently burrow under ground, no doubt of great use in the general nature. The soft harmless little mole, treated in the spirit of a relentless artful destruction; while amidst the services which it renders, we know of no injury—and that accidental—whether, that of occasionally stopping under-ground drains.

(9) *Cheiroptera*, including the tribe of animals the bats, *Malia*, have alone the power chiefly on insects, caught however, partake of the propensity of animals during sleep. By a large size. By their limbs they are able to attach themselves to buildings; and in some cases are capable of the rigours of winter.

(10) *Quadrupedia*, including apes, monkeys, and various other animals, frequent the mountains and plains, and are of great service to man in various ways.

(11.) *Bimana*, or two-handed, "comprehending (as Professor Low observes) a solitary genus, *man*, classed with the mammalia, by the relations of form and animal attributes, but raised far above them all by powers of mind which fit him to perform the functions for which he is destined. He alone is endowed with force of reason to know that the marvellous system of which he forms a part has been ordained by a Superior Power, and to believe that, when the frail fabric by which he is permitted to communicate with the external world shall have been resolved into its elements, the consciousness will be preserved to him of his former being."

We must reserve for our next paper some observations in reference to the much disputed question as to the origin of species in the animal kingdom, and the principal agents that concur in the production of varieties.

ON THE APPLICATION OF SCIENCE TO AGRICULTURE.

No. 1.

INTRODUCTORY REMARKS.

No circumstance indicates more decisively the progress of the physical sciences, than the aid which several of them have of late years proffered towards the improvement of agriculture. There can be no doubt in the minds of those capable of forming a correct opinion on the subject, that such help is not only attainable, but that the present condition of agriculture generally, and the state of several of the nations of the world particularly, urgently require it. Science can exert herself in no way more beneficial to the interests of society, than in aiding the productive powers of the soil. Let us see in what way this can be effected.

In the first place, it may be well to observe, that agriculture, even in its simplest conditions, is, in regard to its *rationale*, a very abstruse and complicated thing. The full explanation of its various phenomena, is far beyond the reach of the physical sciences in their present condition. Advances, it is true, are constantly being made; new facts are elicited; difficulties are explained, and improved modes of culture pointed out; and the period no doubt will come, when in the progress of discovery the important art of agriculture will occupy a distinguished place among the experimental sciences. It has been well observed by one of the greatest philosophers of the present age—Sir John Herschel—that "between the physical sciences and the arts of life there subsists a constant mutual interchange of good offices, and no considerable progress can be made in the one, without of necessity giving rise to

corresponding steps in the other. On the one hand, every art is in some measure, and may be entirely, dependent on those very powers and qualities of the material world, which it is the object of physical inquiry to investigate and explain."

We have said that agriculture is a complex subject, involving many considerations of deep scientific interest. It embraces questions relating directly to geology, chemistry, and to animal and vegetable anatomy and physiology. Take for example the soil. Whence is it derived? What occasions its numerous varieties? What are the constituents of which it consists? These are questions that must frequently occur to the mind of every intelligent and inquiring farmer; and they are questions most certainly to which geology and chemistry only can return a correct answer. It has been found by observation, that the crust of the earth consists of a series of rock formations, overlying each other, and differing in their mineralogical and chemical characters. The mineral constituents of soils have been derived from the disintegration of the rocks on which they rest—a process that is constantly going on by means of natural agents, both mechanical and chemical, aided in some degree by cultivation. There are instances of ancient drifts, where the materials of soils now existing were brought from great distances, but these are only slight exceptions to the general principle just stated. A correct geological map of a country or a portion of it, in which the various rock formations on which the soil rests are represented by the different colouring of the surface, is to the scientific farmer not only interesting, but may to some extent be made practically useful in relation to draining and general farm management. Then again as to the constituents of soils, including both organic and inorganic, it has been determined that the great diversity existing as relating either to mere mechanical condition, or power of fertility, depends upon the proportionate combination of those ingredients. Here chemistry comes to our aid by teaching us how to analyse soils, and thus determine both the nature and amount of the different substances of which they consist.

Further, the farmer, by mechanical operations, so disintegrates and pulverises the soil as to bring it into a suitable condition for the growth of plants, which serve as food to animals. What an astonishing series of changes is here presented. The living plant springing from a little inert seed that was deposited in the dead earth, and furnishing subsistence to the sentient and moving animal! These truly wonderful phenomena tax the highest present attainments of the chemist and physiologist for even a partial and imperfect explanation. But the farmer learns from these facts, that the plant can no more

than the animal live and thrive without food. Hence he applies manures on such soils as have been more or less exhausted by previous crops. He thus learns a fundamental principle in agriculture—too generally violated in practice—that in order to maintain the fertility of the soil, those very ingredients, in some form or other, must be returned to it, which plants, by working them up into their own substance, have taken away. The whole theory and practice of correct artificial manuring, must therefore be based upon the fundamental laws of chemistry and vegetable physiology. The intelligent husbandman is only the servant of nature; by careful study and observation, he interprets her will, and regulates his practice in agreement with her wise and immutable laws.

The products of agriculture are in all cases *organic* substances—that is, they are either plants or animals; the raising and proper management of which constitutes the practice of husbandry. Here it will be perceived at once how important and numerous are the relations between animal and vegetable physiology and the art of culture. Not a step can the farmer take in preparing his soil for a crop, in selecting the most suitable varieties of plants for the peculiar physical conditions of that soil, or in adopting fresh methods for improving the breed and better management of his stock, without involving many considerations, facts and laws strictly scientific. The amount of this most valuable kind of knowledge which the observant farmer acquires from experience alone, is frequently very considerable.

Again, what are called the imponderable agents—heat, light and electricity—exert a potent influence over all the vital processes both of plants and animals. Thus there are points in the farmer's art that come immediately in contact with the most recondite of the experimental sciences. Of the nature of these agents, we know indeed but little or nothing; and their modes of operation, in many instances, are but imperfectly if at all understood. But by combining science with practice, the experience of the past justifies a reasonable hope for the future, that a progressively increasing light will be shed upon many natural phenomena, which now appear inexplicable.

The complex science of *meteorology* has most intimate connexion with all the pursuits of the farmer, and it is well deserving of his attentive study. Although man cannot controul the weather, yet a reasonable foresight and caution—which systematic observation imparts—will enable him to modify his operations to varying circumstances. All the elements which constitute what is usually called *climate*, ought to be carefully observed by every intelligent cultivator of the soil. Heat, moisture, elevation above the sea level, the contiguity of

mountains, arid plains, forests or oceans—these, as well as mere latitude, are important conditions, giving an endless variety both to animal and vegetable forms, and constituting, with other laws, the elements of a universal system of agriculture.

The reducing of the soil to a proper condition for the growth of plants, by means of implements and machines, brings at once the art of the cultivator into immediate contact with the principles of *mechanics*, the science which determines the laws of matter and motion. Every practical farmer must be aware how important it is that the machines which he uses should be constructed upon the most correct principles, in reference to the utmost practicable diminution of the motive power that impels them, as well as the thorough efficiency of the work to be performed. Hence it becomes desirable—we might indeed say necessary—that both machinists and farmers should understand the main principles at least, of mechanical science; otherwise, the one will most probably fail in constructing the machine on the best principles, and the other will be incompetent to direct properly its practical operation. Since deep and thorough cultivation, particularly on soils reduced by frequent cropping, is now becoming universally acknowledged to be necessary to secure profitable crops; and in a country like Canada, where manual labour is always disproportionate to the price of produce, the subject of agricultural mechanics, or the improvement of our labour-saving machines, is to our farmers one of vital and pressing importance, and intimately connected with the welfare and prosperity of the country.

We have thus briefly pointed out some of the connections between agriculture and physical science. Our object has been to establish the *fact* of the connection, rather than to give lengthened illustrations in proof of it. It may be objected that even the most elementary knowledge of the sciences bearing on agriculture, is an acquisition beyond the reach of our farmers generally. This may have been the case in the past, but already an altered and improved public opinion in relation to this subject is beginning to be heard in most of the countries of the civilized world. In our Normal School, in this city, for the training of schoolmasters for Canada, the claims of agriculture have not been overlooked; and the time we believe is not far distant when this effort for connecting instruction in our industrial pursuits with a system of popular education, will be understood and appreciated by the country.—Our future progress and well being must in a great measure depend on the intelligence of the people.

Let no one however, suppose, whatever may be his age, opportunities or condition, that he is shut out from intellectual improvement. The acquisi-

tion of useful knowledge lies open more or less to all, and far more equally than is commonly imagined. We beg our agricultural youth in the country to consider this, and would recommend to the earnest attention of all our readers the following quotation from *Herschel's Discourse on the study of Natural Philosophy*:—"There is scarcely any well-informed person, who, if he has but the will, has not the power to add something essential to the general stock of knowledge, if he will only observe regularly and methodically some particular class of facts which may most invite his attention, or which his situation may best enable him to study with effect. To instance one subject which *can* only be effectually improved by the united observations of great numbers widely dispersed:—Meteorology, one of the most complicated but important branches of science, is at the same time one in which any person who will attend to plain rules, and bestow the necessary degree of attention, may do effectual service. In forming inductions it will most commonly happen that we are led to our conclusions by the special force of some two or three strongly impressive facts, rather than by affording the whole mass of cases a regular consideration; and hence the need of cautious verification. Indeed, so strong is this propensity of the human mind, that there is hardly a more common thing than to find persons ready to assign a cause for everything they see, and in so doing, to join things the most incongruous, by analogies the most fanciful. This being the case, it is evidently of great importance that these first ready impulses of the mind should be made on the contemplation of the cases most likely to lead to good inductions. The misfortune, however, is, in natural philosophy, that the choice does not rest with us. We must take the instances as nature presents them. Even if we are furnished with a list of them in tabular order, we must understand and compare them with each other, before we can tell which *are* the instances thus deservedly entitled to the highest admiration. And after all—after much labour in vain, and groping in the dark, accident or casual observation will present a case which strikes us at once with a full insight into the subject, before we can even have time to determine to what class its prerogative belongs."

In our next we will consider whether, and to what extent, a knowledge of the sciences by the farmer, is essential to the practical improvement of his art

HORSE-RADISH may be kept during winter, by grating it while green, and corking it up in bottles filled with strong vinegar, set in a cool place.

THE PLEASURES AND HAPPINESS OF A FARMER'S LIFE.

There is so much truth in the following extract from a report of the Hon. John I. Slingerland, as published in a recent number of the *Michigan Farmer*, that we are desirous of calling the attention of our readers to the important sentiments it contains. The cultivation of the earth has been too long regarded by the multitude as a mere drudgery—as just so much physical labour, to be mechanically applied, instead of, as it really is, the most natural and useful employment both for the body and the mind. No pursuits connected with the common affairs of life are half so well calculated to develop the various powers of man—physical, mental and moral—as those of agriculture, *when rationally pursued*. Away from the smoke and jostling competition of crowded cities, and the haunts of degrading vice and dissipation, the intelligent and inquiring farmer performs his daily toil, which is of the most healthful kind, in the cool and bracing air of heaven, surrounded by the instruction and elevating teachings of nature's beautiful and wonderful works. We believe there is no pursuit so friendly as his both to health of body and purity of soul; and should he feel conscious of not possessing that desire for knowledge and moral improvement essential to the character of every good and upright citizen, he may safely conclude that the fault is in *himself*, and not in his calling. We think our author has expressed himself unguardedly or ambiguously in saying that agriculture is not to be regarded as a source of wealth, for in fact it is the source and foundation of all material wealth, and the precursor of all the arts of civilized life. The writer most probably meant that agriculture but seldom allows *individuals* to acquire a large fortune, which is strictly correct. If the profits of the farmer are small, as compared to those of the successful trader, like the seasons which govern his operations, they are upon the whole regular and certain. The advantages and blessings he enjoys, which are so beautifully set forth in the extract below in reference to American farmers, may, we feel assured, by using the proper means, be equally realised by ourselves. All our country asks—all indeed that she requires for her continued prosperity and happiness, is, under the blessing of Providence, the dutiful allegiance of her sons.

"Agriculture cannot be looked to as a source of wealth; but money is far from being one of the greatest blessings in life. Its profits, under the most favourable circumstances, must be small, and can only be secured by hard labour, persevering industry, and extreme frugality. Yet the situation of every sober and diligent farmer in our country,

may always be one of substantial independence. A comfortable dwelling, a sufficiency of wholesome food and clothing; the means of raising a family, the opportunity of procuring the best education for his children, the power of gradually improving his property and condition, and of accumulating some humble resources against the time of old age and sickness; and above all the quiet, and comforts, and endearments of home; and the perfect enjoyment of his religious rights and privileges, are blessings as much within the reach of the industrious and honest farmer, as of the richest man in the world; and are sufficient to satisfy any but an inordinate avarice and ambition.

The farmer's gains are honest gains. What he gets is not at the expense of suffering, or loss to others, but as the lawful fruits of his own industry and toil. He above all others, should be a religious man; for the fruits which he gathers seem to be poured at once into his lap from the Divine bounty; and the various domestic animals which depend on his care, and are to be daily fed from his hand, remind him that he is in the care of a merciful and kind Providence.

Every operation of husbandry, with all its beautiful and miraculous results, admonishes the thoughtful mind of that unseen but omnipresent and beneficent agency on which all creatures subsist, and which is every where diffusing life, and happiness and good. The flowers of the field, in their splendor and beauty, the birds of the air, are fed by a paternal kindness; the invigorating sun-shine and the fertilizing rain, the fields glistening with the enriching dew, or yellow with the ripened harvest, and the cattle upon a thousand hills, all speak to the husbandman of God, in tones which cannot be misunderstood. Let his heart and life pour forth a grateful response. In the exercise of an honest industry, who can feel a juster claim to the peaceful enjoyment of its bountiful returns? The possession of these gifts of the divine goodness should remind him of his duty to those whom it gives him the power and privilege to succor and relieve.

When the peace and contentment and comfort which reign in his habitation, are thus enjoyed, his heart should go out in charity to his fellow-men.

Have we not cause of congratulation in the improved moral and social condition around us?—all classes of our fellow-citizens actively and successfully employed; the necessaries and comforts of life at command in abundance; prices of labour such that no man in health need to be in want; each of the various branches of industry in the community receiving its due encouragement under the fostering protection of our Government, and in a multitude of ways mutually aiding each other. The farmer feeds the manufacturer, the manufacturer clothes the farmer, the merchant transports their commodities from one to the other, and the surplus, if any, where it is most needed. In the body politic, as in the natural body, no one part can say to the other, I have no need of thee, but the united and harmonious co-operation of all, is essential to entire success.

Whatever may have heretofore been thought, it is now admitted by all, whose opinions are of any value, that the vocation of the farmer is as honourable and respectable as any other in the community. Our most distinguished and valued citizens have been farmers, and esteemed it their highest honour

to be considered such. Instance, the farmer of Mount Vernon, the farmer of North Bend, and may I not add, the farmer of Ashland, of which any nation might be proud.

To be an honest, worthy and intelligent farmer, is the highest grade of nobility ever to be desired in this land of equal rights. When other titles shall tower above this, then will our liberties be in danger.

In the times that 'tried men's souls,' to whom did we look, but to the substantial yeomanry of the country for succour and support? Our main reliance for the protection of our rights, under the providence of God, will ever be on the independent tenants of the soil.

The home of the farmer is on the soil he tills; there he desires to live; there he expects to die; there he hopes will abide his descendants for many generations. How direct, then, his interest in the welfare of his country!—how ardent his hopes that she may continue to prosper!

And let us never forget that after all our strivings, there is One that giveth the rain and the sun-shine, the seed time and the harvest, and that we are bound to ask him, and to thank him for all his blessings."

MR. COLEMAN'S NEW WORK.

This celebrated American Agriculturist, who has been for several years in Great Britain and other countries of Europe, with a view of making himself practically acquainted with their different systems of agriculture, has just published another interesting and instructive Report on "*The Agriculture and Rural Economy of France, Belgium, Holland, and Switzerland.*" We select the following as containing considerations of grave import, which may be made to have a useful reference to America as well as Europe:

"The present excited state of the civilized world ought more than ever to call the attention of philanthropic individuals and of governments to the immense importance of agriculture. I have been in France during the exciting scenes of a political revolution, in which I have seen very many thousands of workmen without the means of support from their labour, and large bodies of them actually dependent upon public charity for their daily bread. It is not the dangers to public liberty and order, growing out of such large unemployed and destitute multitudes, which so much disturb me, as the actual suffering to which they are exposed, and the melancholy future that lies before them. In London I have encountered, with an extreme depression of heart, thousands of squalid, ragged, miserable poor, without resource but from crime or charity. A distinguished manufacturer in one of the most industrious counties in England, states that there are at least 500,000 operatives without employment, and many on the borders of starvation: tradesmen and professional men will tell you that every trade and profession is overstocked: and one is daily saluted with the melancholy, not to say presumptuous, exclamation, that there are too many people. This reminds one of the sad shipwreck of

the French frigate, the *Alceste*, when many of the wretched survivors, who were floating upon a raft composed of fragments of the ship, deemed it necessary to their own safety to drive a large portion of their suffering companions into the sea—a sad and horrible alternative!

“It would be more than absurd in me to attempt to prescribe a remedy for evils upon which so many sagacious heads and philanthropic hearts have concentrated without success their powerful energies. But I will point out what I deem the true cause of this great evil, and leave to wiser minds to suggest a cure. * * * The great cause of the evils complained of is, that the cultivation of the earth is deserted; and that such innumerable multitudes pour into cities and towns, and filling every profession and every mechanical art and trade, destroy each other by a competition in articles of which the demand is necessarily limited. There may be too many physicians, too many lawyers, and too many ministers, for them all to get a sufficient and an honest living: and too many hatters, and too many printers, and too many shop-keepers; for, besides that these persons furnish more of a particular article or service than the community require, their work is in general only formal; they *only* manufacture, they do not produce; they do not, like the grower of bread and of clothing, create that which may be said to have a substantial and permanent value. For when was the time when there was too great an abundance of the materials—I mean particularly those which can be kept from year to year—for food and clothing, for human subsistence and comfort. As long as this state of things continues, there must be misery in the community; as the population increases this misery must increase.

“In cities, money becomes the standard of prosperity. Wages are paid in money; money is the instrument of subsistence, of gain, and of pleasure. Avarice, under these circumstances, becomes stimulated to excess, and often leads to crime. Men's happiness becomes dependent upon that which has no intrinsic, but only an arbitrary value—a value which is always capricious and continually changing. If men could be induced to cultivate the earth, and trained to the simple habits of laborious and rural life, be satisfied with what that affords them; if they would measure their prosperity and wealth, not by so many shining pieces of gold and silver, which they have hoarded in their closets, but by the produce of their labour in bread and clothing, and the various and innumerable simple luxuries of life, with which a kind Providence so often blesses the labours even of the most humble, how changed would be their condition! If they could be as well satisfied to breathe the fresh air of their native mountains and forests as the corrupt and pestilential atmosphere of crowded streets and confined dwellings, from which both sun and light are shut out; as well content to enjoy the simple and healthful sports of the country as the exciting and exhausting pleasures of city life; if their taste could be better satisfied to contemplate the verdant fields, waving with crops or enamelled with flowers, than carpeted and gilded halls; if they could be taught to prefer skies painted with clouds of brilliant hues, and studded with stars whose lustre never grows dim, to palaces blazing with artificial lustres and

adorned with the far inferior magnificence of man's genius and taste; if, indeed, by any possible means, you could induce men and women, and, above all, the young, to love the country; if, in a word, you could keep them in the country by an attachment to its simple labours and recreations, and prevent their crowding cities to repletion, and thus destroying by competition the ordinary professions and trades which prevail there, where so many vigorous young men and so many fair and blooming maidens rush in, like flies in a summer evening into a blazing taper, to find too often the grave of their health, hopes, happiness, and virtue, what an immense gain would be achieved for morals and for humanity!”

ON FEEDING POULTRY, AND THE CHEMICAL COMPOSITION OF EGGS.

At the recent Meeting of the British Association for the advancement of science, held at Newport, *Captain Ibbettson* read a paper, he had translated from the French, by Dr. Sacc, on the chemical and physiological effects of feeding fowls, and on the changes and chemical composition of eggs during incubation.

“The first part of this paper gave an account of the results of feeding a bantam cock and hen on barley alone. At the end of a week it was found that the cock had gained 18 grammes (a gramme is $15\frac{1}{4}$ grains English), and the hen had lost 21 grammes, but had laid in the meantime an egg weighing 22 grammes. In addition to the barley, a certain quantity of carbonate of lime had been consumed. The egg on being examined was found to contain—

Albumen	19.49
Oil	27.84
Water	52.67

100.00

In hens ordinarily fed, the egg contained—

Albumen	17
Oil	29
Water	54

100

Thus showing that the barley-fed hen laid eggs with a larger quantity of solid organic matter than ordinarily fed hens. It was found that hens during incubation lose weight. A hen before incubation weighed 672.155 grammes; after 483.202 grammes. During incubation eggs lose weight in the following proportion: 1st week, 5 per cent.; 2nd week, 9 per cent.; 3rd week, 3 per cent.; losing altogether 17 per cent. of their weight. The shell of the egg was found to weigh 18 per cent. of the egg, and to be composed principally of carbonate of lime.—The shell is not formed unless the animal has access to carbonate of lime in some form or other. The carbonate of lime is deposited on the egg from without, and is carried to the egg in a state of solution in carbonic acid. Phosphate of lime and traces of iron were found in the albumen and the yolk of the egg, and also soda. The function of the albumen or white of the egg appears to be first

to furnish the young bird with phosphate of lime for its bones, and other earthy and alkaline salts; and secondly, to supply water, the material for the muscles, and to hold in solution the carbonic acid breathed by the young bird before it is hatched.—A communication is constantly kept up between the atmosphere and the chick by the shell, which is the organ of the gaseous, pulmonary, and cutaneous excretions. The yolk of the egg is principally composed of oily matter which appears to be taken into the system of the young chick, and is used in respiration for the purpose of maintaining animal heat. Thus it is found, that in the contents of the new-laid egg there are the same principles surrounding the young chick, as there are in the vegetable kingdom for the supply of the whole animal kingdom. We have, first, protein for nutrition; secondly, oil for combustion; and thirdly, various salts for combining with the agents of nutrition."

To the Editors of the Canadian Agriculturist.

THE ADVANTAGES OF SHEEP FARMING AS AN AUXILIARY TO THE SUCCESSFUL CULTIVATION OF WHEAT IN CANADA.

In developing the resources of new countries, it may generally be observed that in the wisdom of the arrangements of Divine Providence, indications are given by which peculiar fitness for specific purposes may be inferred, and often clearly pointed out as indigenous to, or peculiarly suited for particular classes in the animal or vegetable department, thus supplying an index for directing the agricultural student in exploring the grand field of nature.—This is well exemplified in the abundant and cheap supply of the several varieties of gypsum in Western Canada, some of which have an extraordinary fertilizing effect on Canadian soil, insuring in ordinary seasons the most luxuriant crops of every variety of clover, which constitutes the best sheep feed, whether as hay or pasture. This fact alone, if duly improved, will confer advantages which cannot fail to make Canada one of the most fertile Provinces on earth.

To bring under review the different descriptions of soil on which gypsum exerts the most powerful agency would form a subject of interesting enquiry, and some facts are intended to be communicated when the Report of the Royal Agricultural Society of England is received, of the result of one ton of the grey cretaceous gypsum sent by myself from Paris, Western Canada, during the Presidency of Lord Portman.

With regard to the general quality of the soil in extensive sections in Canada, it may be stated that if Liebig himself had prescribed its composition or compounded a soil in the laboratory, it could not have been better suited for the production of the finest wheats, but the experience of many years on the Wiltshire Downs and in Canada, enables me to state, that the quantity as well as quality of the wheat now produced in Canada, may be very much improved by an extended system of sheep farming: It has been erroneously stated by some theorists, that the climate of Canada is unsuited to the successful labours of the flock-master; but the fact is,

that after taking every thing into the account, Canada has decidedly the balance of advantages: the English flock-master will indeed scarcely believe that for an outlay of about twelve dollars we can in one day so effectually manure with gypsum fifty acres of grass land, as to ensure an average crop of about seventy-five tons of hay, composed of a choice admixture of white and red clover, timothy, &c., which would delight his heart to call his own at any price. We have too in Canada an exemption from the frequent recurrence of some fatal diseases common in England: on reference to my shepherd's books I find the average mortality about three per cent. less here.

The advantages of sheep to the wheat crop are two-fold, viz: manure, and mechanical action by treading; first, as manure: It is well known that the manure of sheep contains a large portion of ammonia; this will be noticed by any one on entering a large sheep-fold in the morning: and this simple fact, in connexion with the affinity in gypsum for ammonia, will explain the extraordinary crops which have been grown on lands on which gypsum had been spread and subsequently folded or depastured with sheep. Another means of fertility will be found to result from the quantity of grease or yolk imparted from the wool, and especially in the summer season, most conspicuous when the sheep are in good condition. The benefit to the wheat crop by treading the fallows with sheep both before and after wheat sowing, is well understood by those who have adopted it, and is invariably practised in the best wheat districts in the south of England; it is doubtless a preventative (in many cases) against freezing out, and also against rust, calamities resulting from, or very much increased by, the uncompacted state of any soil containing a large portion of vegetable matter.

As some of the best wheat lands in every country are intersected by, or rest upon strata of clay or impervious loam, hill-side land, &c., it remains to mention one other agricultural process, absolutely necessary to success in such situations, but which, as yet, is but little understood in Canada—this is effective drainage: without giving credit to all that has been stated in the speeches of the Rev. Mr. Huxtable, at Tamworth and elsewhere, of the wonderful crops grown by him after draining, I have myself grown on land recently drained, forty bushels of wheat per acre, which lands were previously valued at only 5s. per acre, in consequence of excess of water. As the experience necessarily acquired in this department in the discharge of official duties has been somewhat extensive, it is my intention, with a view of promoting the public good, and employment of manual labor, to furnish gratuitously, practical information, by diagram or otherwise; this of course must be free of expense.

In conclusion, I have to congratulate the class to which I belong, on our prospects of shortly obtaining that even-handed justice which we have so long been endeavoring to obtain, in having the same privilege in the markets of our United States' neighbors, as their people have long enjoyed in Canada, and in removing the existing restrictions on the transmission of our produce to the European markets, which have amounted to a heavy tax on us for the advantage of another class, certainly not better men or more deserving than ourselves.

As the exertions of our friend, the Hon. Hamilton Merritt, have been unwearied in endeavoring to promote the great object alluded to, I take this opportunity to suggest, that on the favorable termination of the proposed arrangements, some suitable testimonial be presented to him expressive of our approbation and esteem.

HENRY MOYLE.

*Sheep-walk, near Brantford,
Nov. 19, 1848.*

STATE OF THE BRITISH GRAIN MARKETS, CROPS, WEATHER, &c.

From all that we can learn from public and private sources of information, we are led to conclude that the crops generally throughout the British Islands are below an average. This is the case with wheat, particularly in the south and west of England, where the harvest was seriously injured by wet weather. In Scotland and the north of England, the weather was more propitious, and the failure of the potatoes not so great. In many parts of Ireland, the grain crops were very deficient, and the potato-blight has been general, destroying probably a full moiety of the crop. Notwithstanding these deficiencies, the markets have had a downward tendency, chiefly in consequence of large importations from the continent of Europe; and the latest information gives little hope of a reaction. The corn duties will entirely cease in March, so that any material improvement in prices in spring seems exceedingly doubtful. Hops have proved a large crop, but in consequence of the wetness of the season and high winds, the quality is much complained of. The duty has been announced as £212,416, but little short of 1847. Prices are ruinously low—from 40s. to 60s. per cwt.—and much distress prevails throughout the hop-districts. Great efforts are being made for the repeal of the duty, which amounts to about 20s. per cwt. The heavy rains appear to have continued through the autumnal months, causing destructive inundations in many parts. An agricultural correspondent, writing under date October 27, says that "up to this day, scarcely a farmer in the weald of Kent and Sussex has commenced wheat-sowing; nor is there any prospect of doing so for some time, in consequence of the extreme wet state of the soil, occasioned by the unprecedented heavy rains. The state and prospects of the farmers in this part of the kingdom are most gloomy."—The following observations of an experienced farmer, apply to the county of Sussex, and generally to the south of England:

"We have been farmers for forty years, and with the exception of the year 1816 we never remember so ungenial a one for the operations of agriculture as the present. March and April were continually wet, so that on many farms scarcely a blade was

seen before May. Those who attempted to work the land before did more harm than good, and made the tilth still more unkindly. Dry weather then set in all at once. From the previous incessant rains we felt the sudden change the more, and the wheat as well as the barley did not get on favourably. On the grass land, where fed bare, the change was felt more, and cattle and sheep did very badly. June again was wet, and from that time till September, in this county, we were scarcely forty-eight hours without rain. A very small proportion of the wheat was carried before September, and much of this in bad order. What has been threshed has been found to yield very badly, is much grown, and almost unsaleable. Every one keeps off as long as possible in consequence. We have spoken of our crop of barley. As to oats, they—particularly white oats—are found very light, many not weighing more than 28lbs. per bushel. Peas, in some instances, yield and were harvested pretty well, particularly those sown early. Of beans we do not grow many, and cannot speak with any certainty, but they are not a good crop. Tares were a complete failure. Rape, for feeding in the autumn for sheep, of which a great deal is sown on the Downs, has been abundant, but the sheep have not done well on it, owing to continual wet. The lambs have done worse than we ever recollect. The clovers and grass have been too succulent, and have made them purge violently, in many cases attended with considerable loss. Fortunately, we have hitherto escaped the small pox in our flocks, but the lameness and sore mouths introduced by foreign sheep and cattle have become prevalent. Indeed we much doubt if we shall ever see the disease eradicated. We have found much benefit from driving our sheep every morning through a pound, in which we put some quick lime. From being under cover, it sustained its efficacy for a long time.

AVERAGE CROPS IN NEW SOUTH WALES.—The following is stated by a writer in Simmond's "Colonial Magazine," to be the average quantity per acre of agricultural crops, as calculated upon a period of ten years. Wheat, 14 bushels; maize, 17½ bushels; millet, 4½ bushels; oats, 13½ bushels; rye, 13½ bushels; barley, 15½ bushels; potatoes, 2½ tons; tobacco, 7 cwt.; and hay, 1½ ton. The average of maize in such a climate as New Holland, is considerably less than we should have expected. Colonial farming, however, is generally performed in so imperfect and slovenly a manner, as necessarily to keep the average amount of produce extremely low. This is the case in British America, as well as in Australia.

FARM-YARD DUNG.—Dr. Coventry, the professor of Agriculture at Cambridge, estimates the quantities of dung to be made from the consumption of crops in the following manner:—

	Tons.
An acre of turnips or cabbages - - - -	6
An acre of clover or grass the first year -	6
Ditto, if mown the second year - - - -	5½
Ditto, if pastured the second and third year -	5
An acre of Pulse, part of the seed being used at home - - - - -	5½
Ditto of pulse crop when the seed is sold -	5
Ditto of white corn - - - - -	4

PROVINCIAL ASSOCIATION.

We beg to state for the information of the Directors of the Provincial Association, that the Annual Meeting of Directors will take place at the Court House, Toronto, on the *third* Wednesday in February next, at 10 o'clock, A. M. We are requested to announce that important business will be transacted, and it is therefore desirable that a full attendance of Directors should be had. The affairs of this important Institution are in some confusion from neglect and inattention, and we earnestly hope that before another Exhibition a better system of management will be introduced.

HOME DISTRICT AGRICULTURAL SOCIETY.

The Annual Meeting for the election of Officers, &c., will be held at Toronto on the second Wednesday in February next.

REMARKS ON THE SEASON,

EMBRACING METEOROLOGICAL OBSERVATIONS MADE IN ENGLAND AND THE UNITED STATES.

From the Genesee Farmer.

The fruits of the labour of the husbandman are immediately dependent on the favourableness of the season. With seasonable rains, and otherwise suitable temperature of climate, the industrious and careful farmer is sure to reap a plentiful harvest. From the fact that climate exerts a greater influence upon plants than the mechanical labours of the cultivator, it becomes a subject of the deepest interest connected with agricultural and horticultural pursuits. The parts of this subject which particularly interest and concern the tillers of the earth, are those relating to the quantity of rain, the number of days on which it falls, and the temperature of the atmosphere during the period of the growth and maturity of the plants. Mr. Lawes, an able contributor to the agricultural journals of England, gives the results of his observations on these points for three years. These are subjoined. The period embraced in the table begins with April and ends with October. He considers the climate so far as it affects the growth of grass in April and May; the wheat climate commences with May, and ends with August; the turnip season to begin with June, and end with October.

	1844	1845	1846
No. of days' rain fell during April and May, (grass season)	14	36	28
No. do. from May 1st to end of August, 17 weeks, (green season)	43	71	45
No. from June to end of October, 21 weeks, (turnip season)	67	74	65
Inches of rain during April and May, (grass season)	0.59	3.87	5.19
Do. from May 1st to the end of August, 17 weeks, (grass season)	5.17	9.34	8.41
Do. from June to end of October, 21 weeks, (turnip season)	10.37	9.62	13.95
Mean temperature during April and May, (grass season)	52.6	48.9	50.5
Do. from May 1st to end of August, 17 weeks, (grass season)	60.3	58.2	63.1
Do. from June to end of October, 21 weeks, (turnip season)	59.3	57.8	62.2
Temperature above or below average from May to end of August, (grass season)	Above. Below. Ab'v.		
	0.5	2.1	3.2

He remarks that the two spring months of 1844 were

unusually dry, the quantity of rain and the number of days on which it fell being small. The summer was warm, and the quantity of rain moderate. The climate being unadapted to an increased accumulative and circulating condition of the plants, the favorable growth of the spring plants was prevented; but a warm dry summer favored the depositing and elaborative condition, and hence a good quality of grain.

In 1845, the great number of rainy days and the low temperature were highly favourable to the circulatory condition of the plants, and therefore green crops of all descriptions and straw were unusually abundant, and the grain of a bad quality.

In 1846 the spring favoured the circulatory condition, and the crops of grass and clover were luxuriant. In the month of June, when the grain was forming, the temperature was $6\frac{1}{2}$ above the average, and there were only two days on which rain fell; the quality of grain produced was very fine.

On the contrary, the crops of turnips were inferior, owing to there being 31 successive days without rain, twice during the season. From May 21st to June 21st, no rain fell, and from August 22d to September 21st, rain fell on three days only—the quantity being less than one-tenth of an inch.

In another table Mr. L. gives the effect of climate on the quantity and quality of produce of the unmanured plots of the experimental wheat field, carried through three years as before; also the average results of variously manured plots.

	1844	1845	1846
Corn (i. e. wheat) per acre in bushels,	16	23	17
Straw per acre, in lbs.,	1120	2712	1513
Weight of wheat per bushel in lbs.,	58 $\frac{1}{2}$	56 $\frac{1}{2}$	68 $\frac{1}{2}$
Per centage of wheat to straw, (straw 1000,) MEAN OF ALL THE PLOTS.	821	534	797
Weight of wheat per bushel in lbs.,	60 $\frac{1}{2}$	56 $\frac{1}{2}$	63
Per centage of wheat to straw, (straw 1000,)	868	499	765

In his remarks on this table he says, that, the effect of climate, as indicated by the other table, is in accordance with the general character of the season. The lowest weight of the bushel, and the greatest amount of straw, were obtained in that season which had the greatest number of rainy days and the lowest temperature; the least amount of straw with the driest season, and the first quality of grain in the warmest summer.

Will not some of the farmers who read this paper try similar experiments, and publish the results in the Genesee Farmer? All the apparatus necessary to try the experiment is a thermometer, a rain-gauge, and a machine for weighing.

I here add the results of my observations for the corresponding seasons given in Mr. Lawes' table:

	1844	1845	1846
No. of days' rain fell during April and May, (grass season)	27	20	21
Do. from May 1st to end of August,	63	45	42
Do. from June 1st to end of October,	65	65	54
Inches of rain during April and May,	4.90	5.14	3.52
Do. from May 1st to end of August,	12.41	12.65	13.64
Do. from June 1st to end of October,	13.92	17.16	20.85
Mean temperature during April and May,	55.6	50.1	53.3
Do. from May 1st to end of August,	66.2	64.3	66.1
Do. from June 1st to end of October,	61.2	62.1	63.4

I have presented this table to show by direct comparison the difference in climate between this place and England.

Our grass season and the grass season in England very nearly correspond; not so, however, with the grain season. Wheat matures and is harvested from six weeks to two months earlier here than in our fatherland.

The season, just closed, was unusually favourable for the interests of the farmer—not very rainy, and not very dry—not very cold and not very warm—but was furnished with just about that quantity of moisture and degree of temperature which best promote the growth

and maturity of vegetation. Consequently the labours and cares of the husbandman were crowned with a bountiful harvest, both the earlier and later. September was cool and rainy, October was exceedingly fine—the splendour and beauty of the hues of the decaying leaves of the trees unsurpassed; and the month of November thus far has been exceedingly unpleasant—snow and rain, or rain or snow, almost every day.

J. WETHERELL.

Rochester, Nov. 13, 1848.

ON THE MEANS OF DESTROYING SNAILS.—I determined to undertake the analysis of the small grey snail (*Limax agrestis*), so frequently found in gardens and in the fields, and which has this year done so much damage to all kinds of cultivation, hoping that such an investigation might lead to the discovery of a means of preventing the too great increase of these creatures. My attention was especially directed to the glutinous matter which they continually secrete, and which serves to attach their bodies to the surface over which they pass. I endeavored to find out in what way lime which has long been recommended to cultivators as a means of destroying snails, acted upon them; and I have ascertained that lime-water diluted with three times its bulk of water, was sufficient for their destruction. Water, scarcely rendered alkaline by the addition of potash, killed them still more quickly, causing a large quantity of slime to be thrown out. Solutions of the metallic salts, when added to this slimy matter, produce an abundant coagulated mass; that which is produced by the action of nitrate of copper dissolves in an excess of potash, and produces a violet-coloured liquor. Of all the poisons which I have tried on the snails, there is none which has appeared to exert so deleterious an influence as the alkalis. If a drop of caustic ammonia, or of caustic potash, be added to a quart of rain-water, an alkaline solution will be formed of such little strength that it scarcely affects delicate test-paper, and causes no impression on the organs of taste; if however we place some snails in this solution they soon die, whilst other snails placed in rain-water alone, escape out of the vessel in which they are placed. It would appear difficult to find more energetic poisons for snails than those I have indicated; I therefore think that a weak solution of caustic potash or soda, or, what would be still more economical, the refuse lyes which have served for the washing of linen, diluted with water to which a small quantity of quick-lime has been added, will enable us to attain the object we have in view more readily and certainly than by the use of lime alone in the state of powder, as this is speedily converted into a carbonate of lime by the action of the air, and thus loses its poisonous influence on the snails.—*M. Braconnot, in The Florist.*

AGRICULTURAL COLLEGE, CIRENCESTER.—We are glad to hear that the Agricultural College at Cirencester is in a very prosperous condition, and that the power of nominating students, which is vested in the shareholders, is soon likely to be a valuable privilege. The opportunity which it affords of acquiring sound agricultural and scientific education, under Mr. Wilson, its able principal, and the other highly qualified professors, on a farm now getting into a high state of cultivation, is perhaps superior to any other of the kind in this country; and its bearing upon a young man's prospects in life for obtaining a livelihood in connection with the management and cultivation of land, have just received satisfactory exemplification. During the past week we hear that two students, who since they left the college had prepared themselves by further practice, have obtained valuable appointments.—*Agricultural Gazette.*

MR. COLEMAN IN ENGLAND.

The Saffron Walden Agricultural Society held its annual meeting for show of stock and competition in ploughing, yesterday week. Lord Braybrooke presided; Lord Sondes, Lord Walsingham, Mr. Oct. Duncombe, M.P., and Major Beresford, M.P., were among the numerous gentry that attended. The usual routine of agricultural speeches was relieved by the presence of Mr. Coleman, an American, who has been some years in England and the countries of Western Europe, on an agricultural tour—commissioned by certain public bodies to collect European knowledge on agricultural subjects, for American use. Mr. Coleman made a speech full of hearty national sympathy with this country, and of instructive matter to his audience, whom he warmed to enthusiasm by the animation of his oratory. Some of his facts on the agriculture of the Flemings, the only people who excel the English in any department of that pursuit, were remarkable. For example, in commenting upon the Flemish maxim, "Without forage, no cattle; without cattle, no manure; without manure, no crop," he gave this statement—

"The Flemish farmer keeps twice as many cattle as the English. A valuer was sent to value the manure upon some land about to be sold; and he estimated the manure per acre at—how much do you think? Was it at £10? Thirty shillings, one gentleman told him, was the usual price—at £15—at £20—will any one bid more—it's going; no, at £45 per acre. And the party who had manured in this way was a shrewd man, who would not have put it on if he could not have seen his way to a fair return for it. Manure is, in fact, the life-blood—it is the foundation of agriculture. We hear of agricultural schools, and the researches of learned chemists, which are to turn everything into gold. Why, chemistry has long been well understood, at least to this extent, that we have not to learn the value of manure; and I say, let the chemist go on—he will tell you what he has found when he discovers it; and in the mean time do you go on saving all the manure you can, and bestowing it with the most liberal hand."

Diverging from the more immediate topic, Mr. Coleman touched on education; and thence on the institutions of his own country and of this:—

"You call us a Democracy. We are not a Democracy—we are a Republic. We are governed by refinements, the tendencies of which are to place us under the wisest and the best men of the country, if these were carried out. What country do we come from? From England; and you are a Republic. A limited Monarchy is a Republic; and you have the principle of Democracy infused into it. The opinion of some is, that there is no liberty unless every man has his will; but if every man had his will, there would be no liberty at all. There cannot be any liberty enjoyed but under the strongest government—the stronger the government, the more the liberty; but I do not say a despotic government."

He ended with hopes for increasing harmony between his native country and "the old fatherland"—

"I can only pray that the sympathies that bind together these two nations of the earth in peace and civilization, the mother and daughter, the parent and child, may grow stronger and stronger. That which was considered the means of separation has become a bond of union; and may this union continue! If I could find a man on either side of the water who could speak with indifference and complacency of a war between the two countries, I would hang him—I would hang him, for high treason to humanity, on the first tree I found. I am too much oppressed with all I have seen in England to express my wishes as I could desire; but I earnestly pray for the continued prosperity, for the wealth, happiness and glory of that magnificent, that great and glorious land in which you live."—*L. Spec.*

AGRICULTURAL DINNERS.—THE BROMYARD AGRICULTURAL SOCIETY held their annual dinner on Thursday week. The meeting was rendered somewhat remarkable by the presence of the three county members at the dinner, when a discussion was raised by Mr. GEORGE CORNEWALL LEWIS, M. P., Under Secretary of State, on the probable effect of the free importation of foreign corn into this country under the new regulation, which will come into operation at the end of February next. Mr. Lewis, in responding to the toast of the "County Members," said that without undertaking to be a political prophet, he would undertake to express an opinion that the persons who predicted that English corn, when the import duty should be altogether removed next spring, would undergo a great depression in price, made a great mistake. Perhaps they would allow him shortly to state what he considered were two material circumstances which were generally overlooked in discussing this important question. Those persons who entertained these predictions overlooked two things, the quantity of the supply and the cost of the carriage in transit. If he made out these points, he thought they would agree with him that they were two very important considerations to be overlooked. And, first, with regard to the quantity of supply. Suppose the duty was at this moment what it was at the time when the introduction of foreign corn was prohibited as long as the average price of English corn was under 80s. per qr. Suppose the price was 70s. per qr. in England, and at Hamburg 50s. per qr., then the class of people to whom he had already alluded imagined, that if the prohibitory duty were removed, the selling price of the Hamburg corn in England would be 50s. per qr. This was the supposition on the note. On the other hand, people in large manufacturing towns exclaimed, "See how the farmers are starving us by keeping up the price of corn." Now, this at first seemed a plausible argument; but he would venture to say that the farmer who thought he should lose by selling his wheat at 50s. per qr., and the manufacturer also, were both mistaken. The price of corn at Hamburg was determined by the demands of the comparatively small town of Hamburg; but let them remove the restrictions on the importation of corn into England, and they would find that the small portion of corn at that place would be as nothing compared with the demands of this country. Let the import duty in this country be removed, and at once the price of corn at Hamburg would go up; the people of Hamburg would have to pay more for their corn than before, and we should have to pay but little less. They must bear in mind the immense demand in this country for corn. Instead of our prices approaching their standard, theirs would progress towards ours, and a medium price would be established between the two. So much for one part of the question. Another party urged that as the price of wheat in Russia and Spain was as low as 15s. per quarter, when the duty was removed, we should be inundated with wheat from those countries, and farmers would be ruined. On the other hand, the manufacturers cried out that by the removal of these duties they would be enabled to live in abundance and prosperity; their manufactures would flourish, and the prosperity of the country would reach a high point. Here again was a mistake. It was perfectly true that if they took some particular points, the price of some limited quantity of wheat on the spot in certain parts of Spain and Russia might perhaps be 15s. per quarter. Indeed in some parts of India (Hindustan), wheat could be grown at about 10s. per quarter. But would any gentleman like to undertake, as a speculation, to import that wheat into London? If he thought he could afford to sell it at 50s. per quarter, he would find that he was under a mistake. We in England did not know what a country like

India, without roads or canals, was. There everything had to be conveyed across the country upon the backs of horses, so that the cost of produce was doubled by twenty miles of transport. Such was also the case in some parts of Spain and Russia. In certain parts of Spain, for instance, wine was so abundant that in some years it was poured out of the old casks, in order to introduce the new. That simply arose from the enormous cost of carriage, and the want of wood for making casks. Gibraltar and Cadiz, too, were supplied with American wheat at a price below what it could be supplied from the interior of their own country, for want of the means of transport. Therefore it was nothing to tell them that wheat was to be purchased at 15s. per quarter in Spain or on the steppes of Russia. The question was, what could that wheat be sold at when imported into London. These, he thought, were two of the most material elements in the probable price of corn in this country, with reference to next summer, after the intended changes in the laws of importation shall have taken place.

HESSIAN FLY.—This destroying insect is becoming more and more plenty over the whole wheat district, subject to slight variations through the effect exercised over them by the severe and open winters and frosts. That they are extremely local, and when once colonized do not emigrate far, when they can find the proper pabulum for subsistence near home, we have been a long time satisfied. A respectable and extensive farmer in Pennsylvania, states that he has for ten years past, almost entirely prevented their depredations, by burning over the stubble directly after cutting his wheat, and before they had changed from the *larve* to the winged state; while fields in his immediate neighborhood were destroyed.

This view of the subject is remarkably confirmed, by a case related to us a few days since by one of our best wheat farmers in this section. His crop was so entirely destroyed that it did not pay for harvesting, and the land being in fine tilth, he resolved to follow it again with wheat, and consequently turned it over pretty soon after. About the first of September he commenced cross plowing, and when about half the field was finished, the other half looked in such good order that he omitted plowing it, and sowed his wheat. The next summer the grain was so destroyed on the part twice plowed that he did not harvest it, while the other was a full average crop.

The rationale is plain; the insect when in the worm state, was plowed under with the stubble, and on that part twice plowed was brought up again, hatched out, and attached their eggs to the young wheat—while in that part but once plowed they were buried beyond their power of getting to the surface, and were destroyed.

These facts are worth looking at, and support each other remarkably.—*Genesee Farmer*.

CHEAP REMEDY FOR TURNIP FLY.—As soon as it is seen that the fly is at work, procure some soot and sow it broadcast, or sprinkle it over the young plant, when the fly will vanish as if by magic, and will not come near the plant again, so long as the soot retains its pungency; but should rain fall before the plant has outgrown the fly's influence, then when it becomes fair repeat the dose of soot. I can assure you from satisfactory experience, that it is a most effectual cure for the fly, and a fructifier of the soil, as my present crop of Swedes (Skirving's Purple top) bears witness, some of them being now, 28th Sept., upwards of two feet in circumference. Some of my neighbours had to sow their turnips twice and even three times.—*Ullswater*.

Horticulture.

MONTREAL HORTICULTURAL SOCIETY.

We have been favored with the first Annual Report of the *Montreal Horticultural Society* for the past year, together with a copy of the Proceedings connected with its formation in 1847. The Society, considering its recent establishment, appears to be well supported, and promises to run a successful career of usefulness. Its first year's income appears to have been nearly £100; and during that period there had been four public exhibitions, which were of a highly creditable character, and numerously attended. At the Annual Meeting in September, not less than 1500 different articles were presented for competition. The show of apples and plums, in particular, is stated to have been splendid; comprising several new sorts of peculiar richness and flavor. "The result," says the Report, "of these exhibitions has been to shew the capabilities of Montreal Island for the cultivation of fruits, as well as other products; to create a generous emulation among the members, to promote and foster a taste for horticultural pursuits, and to awaken an interest on the part of the public in the operations of the Society." It is intimated that arrangements may probably be made with the University of M'Gill College, under which a portion of the grounds belonging to that Institution might be obtained for the purposes of the Society. By the bye, could not something of this sort be done here with our own University in Toronto? It is high time that the *Queen City of the West* manifested more interest in gardening pursuits, and that a *Horticultural Society* be established forthwith. We shall be happy to render such a project our humble aid. The following extract from the Report will be perused with interest by our readers; and in our next we hope to make room for some portions of the chaste and elegant address of the Society's President,—the Honorable Judge Day:

"The importance of Horticulture cannot be too highly estimated. Whether regarded as a means of affording employment to those possessed of leisure, or as a source of recreation to those oppressed with the cares of business, or the duties of a profession, it is equally attractive and interesting. To the man of science and taste, it opens a wide field for investigation and study; to the high and the low, to the rich and the poor, it presents a fountain of the purest and most innocent pleasure, of which all may partake with equal enjoyment. There can be no doubt that attention to Horticulture strengthens the attractions of home, and contributes not a little to those interesting associations of childhood which, in after life, afford the most pleasing recollections, and which, not effaced by time or distance, are often

awakened by the sight of a familiar landscape, flower, or tree. As a means of developing the better part of our nature, and of promoting those refined tastes and feelings, which lead men to seek pleasure in that which is pure and good, the pursuit of Horticulture stands unrivalled. Regarded in a practical point of view, its importance is still greater, since it promotes the comforts and provides the necessities of life; at the same time, adding to the delicacies and luxuries of the table. Such advantages surely present sufficient justification for any amount of effort in their attainment; and if, in any degree, these happy influences have been exerted by the formation of this Society, it will be an ample reward to those whose zealous endeavors have been devoted to its welfare.

Your Board are happy to observe, that a general interest in Horticultural pursuits, hitherto unknown, seems to be recently awakened. They regard the large importation of plants and fruit trees, the erection of numerous extensive vineries and green houses, the increased taste for Horticulture, and attention to gardening, as evidences of this improvement. They hail this as the dawn of a brighter day, when our beautiful Island may be in reality entitled to the appellation it often receives, of the *Garden of Canada*."

QUALITY OF APPLES,

AS DECIDED AT THE BUFFALO POMOLOGICAL CONVENTION.

From the Genesee Farmer.

The St. Lawrence Apple.—Several gentlemen from Canada, Western New York, and elsewhere, regarded this fruit as being nearly first-rate, and some even quite first-rate, in quality. The tree is a vigorous grower and a good bearer, and the fruit always large, fair and fine. Mr. Thomas of Macedon objected to it on account of its coarseness, and said he regarded it as not more than second or third-rate. After considerable discussion it was voted, though not unanimously, to be first-rate.

Pomme Royal or Dyer.—Mr. Elliot said this apple was cultivated in Ohio, in some collections, as *Cole's Spice* and *Golden Spice*. Mr. Thomas said it was cultivated in Western New York, in some collections, as *Hollow Crown*.—Unanimously passed as first-rate.

Early Joe.—All who knew this fruit concurred in its being one of the very best apples of its season, but that it should be eaten soon after being picked from the tree. [We have had this fruit in fine condition 6 weeks after being gathered.]

Early Strawberry.—First-rate for its season.

Sweet Bough.—First-rate for its season.

Sine qua non.—First-rate for its season.

Minister.—A famous New England Apple. Passed as second-rate.

Summer Rose.—Unanimously passed as first-rate.—Mr. Elliot of Ohio remarked that if he should cultivate but one early apple it would be this.

Summer Queen.—A sweet variety was presented under this name, but was decided to be the *Augustine*.—The true variety, being that described by Downing, passed as first-rate for cooking, and second for the table.

Augustine.—Third-rate.

Dutchess of Oldenburg.—First-rate for cooking, and second for the table.

Wagoner Apple.—A new variety from Chas. Lee, Penn Yan, passed by, being unknown to most members of the Convention. J. J. Thomas considered it as

comparing favorably with the *Spitzenburg* and superior to the *Melon*: defective only in being a little too compact, but first-rate. P. Barry considered it as nearly if not quite first-rate.

Fameuse or *Pomme de Neige*.—Considered by many as first-rate, especially in the more northern localities.

Red Astracan.—Passed as first-rate for cooking and second for the table. This is a beautiful and very popular summer fruit, always commanding a high price in market. Mr. Thomas remarked that it was regarded as good for market on account of its beautiful skin, but beyond the skin it had little merit. He says, however, in the *Cultivator* of last month, that "it ought to have been stated to the Convention, that this variety, though not a good table fruit, possesses great excellence as a very early cooking apple, being far superior, in this respect, to the *Yellow Harvest*."

Rhode Island Greening.—Passed as a first-rate standard fruit, both for table and cooking. Mr. Allen, of Mo., said there it was an autumn fruit, and grew much larger than here.

Newtown Pippin, (Yellow).—This apple elicited much discussion—western cultivators generally agreeing that, with them it was not worthy of cultivation. Laid on the table.

Newton Pippin (Green).—Gentlemen from Western New York, Canada, Ohio, and Illinois, stated that their experience with this apple was unsatisfactory.—Mr. Dougall and Mr. Beadle of Canada, stated that they had succeeded in raising a good crop by the application of manure and ashes. All agreed that it required good soil and good culture. Mr. Thomas remarked that even with Mr. Pell, under his high culture a large portion of the crop was knarly and unmarketable. Mr. Prince thought that in a good soil, and with manuring and good culture, it would be good every where.

Roxbury Russet.—Passed as first-rate.

English Russet.—Half a bushel of this variety, of last year's growth, was presented by D. N. Robinson of Buffalo, quite fresh and sound. Members of the Convention agreed that this was a valuable variety, being a great keeper, and the tree a fine grower and bearer. Much discussion was elicited regarding the name. Mr. Prince contended that it was not the apple described by Downing as the *English Russet*—that *English Russet* was too vague a name and meant nothing, as there are many *English Russets*. Mr. Chas. Downing and Mr. Thomas agreed that it was the apple described by Downing as *English Russet*—same as *Poughkeepsie Russet*. The Convention voted that it was a first-rate keeper, and second-rate in quality, and that it should be called the "*Poughkeepsie Russet*."

Lowell Apple.—(Cultivated in Ohio and other places as the *Queen Anne*, *Pound Royal*, and *Tallow Apple*, or *Tallow Pippin*; in Western New York as *Risley Apple*, *Greasy Apple*, &c.) It was considered by all to be a valuable variety, on account of the vigorous growth and productiveness of the trees, and large size and fairness of the fruit. Passed as first-rate.

Westfield Seek-no-farther.—Passed as first-rate.

Ribston Pippin.—Objections were raised against this variety on account of its dropping its fruit in September, in many localities. It was said to do well in Canada, Maine, and other localities. Passed as third-rate in this State, and second in northern sections.

Northern Spy.—This apple was discussed at great length. It was admitted by all to be one of the best of apples, but required more careful culture than some other varieties, to produce it in the highest perfection. Mr. Bissell stated that there were trees in Rochester that had not been manured in fifteen years nor pruned for several years; yet the fruit, except in the shade, was fine and high-flavored. Passed as first-rate with

proper pruning. [We objected to this qualification as being entirely superfluous. Common sense teaches that every variety is the better for "proper pruning." If there be any propriety in affixing it to all. This must be clear enough. No apple whatever, nor indeed any other fruit, can be produced in perfection without pruning, or with improper pruning.]

Vandevere.—Passed as first-rate.

Yellow Belleflower.—Mr. Colt of Ohio, said this was the most popular apple in the Cincinnati market. Mr. Elliot did not agree with Mr. Colt in this. P. Barry remarked that in Western New York it was a popular and excellent variety. Mr. Prince said there were several apples cultivated under this name, and suggested that it be passed by.

Twenty Ounce Apple. First in size, beauty and productiveness, but second in quality.

Twenty ounce Pippin.—Third rate.

Gravenstein.—First-rate in its season.

Fall Pippin.—First-rate.

Autumn or Late Strawberry.—First-rate.

Red and Green Sweeting.—Unworthy of cultivation, although some valued it for baking.

Swaar.—First-rate in all respects.

Belmont.—First-rate, though said by Mr. Elliot to be rejected in Southern Ohio.

Hawthorndean.—Voted unworthy of cultivation.

Mother Apple.—First-rate. Has the highest character wherever known.

Baldwin.—Mr. Elliot and others said it was subject to the bitter rot, and valueless in Ohio. Voted first-rate in Massachusetts and New York, but unsuccessful in Ohio.

Jonathan.—First-rate.

Porter.—First-rate.

Rambo.—First-rate wherever cultivated.

Bourassa.—Passed by.

Hubbardson Nonsuch.—First-rate.

Pomme gris.—First-rate in the north and in Canada.

Gloria Mundi.—Unworthy of cultivation.

Bullock's Pippin (Coxe), or *American Golden Russet*, (Downing). Worthy of general cultivation.

Jersey Sweeting.—First-rate; worthy of general cultivation.

Cornish Gilliflower.—Unworthy of general cultivation.

American Summer Pearmain.—First-rate in all respects.

King of Pippins.—Second-rate.

Summer Hoglee.—Different from *Hoglee crab*, with which some have confounded it. Considered by many as first-rate.

FLAX STEEPED IN WATER AS A MANURE FOR FLOWERS.—A correspondent in the *Gardener's Chronicle* asserts, that he has used water in which flax had been steeped as a manure for flowers with great success. Dahlias thus watered kept ahead of all others not so treated, and their bloom was very rich and superior.—It is said that this manure is adapted to roses and flowers generally. It is worthy the attention of market gardeners and florists, and that it will destroy that animaltroublesome pest, the green fly.—*Gardener's Chron.*

THE CULTIVATION OF RASPBERRIES.—The shoots or canes grow up in one summer, produce fruit in the next, and then die to the ground, a succession having in the meantime sprung up. The pruning consists in cutting away all the dead wood, that which has borne first, and in shortening that which is alive, thinning the canes so as to leave three, four, five, or six inches from a plant, according to its strength. This operation may be effected as soon as the leaves have fallen, or, better, as soon as the crop has been gathered, which gives the young canes a better chance of becoming better ripened.—ib.

Mechanics and General Science.



THE PLOUGH.

"The *Ploughman* o'er the yielding land,
With eye intent, and steady hand,
Defines the intended path; and cheers
And guides his steeds, or patient steers,
With voice across the indented plain,
And shaking of the slackened rein."

Mant's British Months.

Of the numerous implements of modern husbandry, the *PLOUGH* occupies the foremost rank. It is the most ancient as well as the most useful. The farmer could no more do without it than the mason without his trowel, the backwoodsman without his axe, or the lawyer without his books, and, we may add, without *clients*. The history of this implement, from the earliest ages to the present time, with the improvements in its form and structure, would give us a very perfect view of the condition of Agriculture, and the progress of improvement in that important art, since it was first practised by man. We find mention of the plough in the earliest of all written authorities, and, considering its value and importance, we can hardly imagine an extensive cultivation of the earth to have been effected at any period or in any country without its aid.

The *form* of the plough before and for a long time after the commencement of the Christian era, cannot be very exactly defined, as it is but imperfectly represented by the rude pictures and hieroglyphic drawings which have come down to us. From the language of the Old Testament Scriptures, we infer that the plough in use when they were written had a coulter and share answering to the same parts in the plough of the present day—(1 Samuel xiii. 20). Wheels, also, were attached to the implement at a very early day, as appears from ancient drawings of the Greek plough. The plough used by the Romans, and described by Virgil in his *Georgics* (drawings of which have also been preserved), is a very rude and imperfect implement. Indeed, it is as unlike the modern improved plough as can well be conceived. *Turning* the soil seems not to have been the object of the early cultivators,

or, if it was, their instruments were ill adapted to accomplish it. Until about the sixteenth or seventeenth century, the *mould-board*, properly speaking, does not seem to have been known. The ground was merely *stirred* previous to the discovery of the mould-board. Ploughing, among the Greeks and Romans, and indeed among all European nations prior to the period mentioned, generally consisted in running furrows parallel and near to each other, into which the seed was cast, and, by a second operation of the same implement, ploughed in. In some instances a wooden harrow was used. Where the soil was light and friable, and so well cultivated as to be free from grass and weeds, such a system might produce good crops; but in the case of stiff, tenacious clays, stoney land, or an old tough lea, we should have poor hopes of the harvest. We are told that in many parts of France, the old Roman plough is still in use, under the name of *Araire Romain*.

Although the Dutch and Flemish made considerable improvement in its construction, during the sixteenth and seventeenth centuries, it was full a century later before the plough received anything like that scientific form and perfect adaptation to the end required, which it now possesses. The English, and more particularly the Scotch, have the merit of its latest and greatest improvements. It is curious and interesting to trace the progress of plough-making in England. The implements of its early cultivators were as rude and imperfect as those of any country. It could hardly be otherwise, for by a law of the ancient Britons no man was allowed to hold or guide a plough till he was able to make one! The driver was required by the same law to make the traces, and these were to be formed of withes of twisted willow. This law has, of course, long since become obsolete, but many terms still in use among ploughmen and teamsters were derived from the customs of that period. *Witten-trees* are called *witten-trees* or *whipple-trees*, &c. Our Saxon

ancestors, as we are informed, adopted the barbarous practice that prevailed at one period in Ireland, viz., that of fastening their horses to the plough by their *tails*! This absurd and cruel custom prevailed so extensively in the latter country, that an act of parliament was passed in 1634, to put a stop to it. The 11 & 12 Car. II., ch. 15, entitled, "An Act against Ploughing by the Tayle, and Pulling the Wool off Living Sheep," declares, "that in many places in this Kingdome there hath been a long time used a barbarous custome, of ploughing, harrowing, drawing and working, with horses, mares, geldings, garrons and colts by the taile, whereby (besides the cruelty used to the beasts,) the breed of horses is much impaired. And also, divers have and yet do use the like barbarous custome of pulling off the wool yearly from living sheep, instead of clipping or shearing of them." It is then enacted, that such practices shall be illegal, and punishable with fine and imprisonment. We have seen the statement of a recent agricultural writer, whose name we do not recollect, that he had himself witnessed this wretched practice, and that it obtained in some parts of Ireland, notwithstanding the statutory prohibition, till within a few years.

Jethro Tull, the father of horse-hoe husbandry, and one of the earliest English writers upon practical agriculture, made considerable improvement in the plough, as well as in various other agricultural implements. He lived about a century and a half ago. After making some researches into the history of the plough, he came to the conclusion that it was "found out by accident and that the first tillers, or ploughers of the ground were *hogs*!"—However the question of priority in ploughing, as between the *quadruped* and *biped* may be determined,—the one a natural, and the other an artificial workman; we cannot admit that there is any necessity for supposing the discovery of the plough to have been accidental. We might as well suppose that the spade was discovered by accident. When Adam was turned out of the Garden of Eden, and found himself obliged to till the ground, he probably began by digging; and the sharpened piece of wood, which mere instinct must have taught him to prepare and use in the operation, was, no doubt, the true original of the modern spade. The crooked piece of wood, which we find represented in old drawings as the plough of the early Romans, stands in the same relation to the perfect implement in use among us. The improvements in the plough have been gradually made, though within the last hundred years it has advanced further towards perfection than in all the previous period, up to the time when the hog's snout resembled it in form and equalled it in efficiency. The first im-

provement of much note in England "was," says the author of *British Husbandry*, "that of a light swing plough, invented upwards of a century ago in Yorkshire, whence it obtained the name of the *Rotherham* plough, and was very generally employed throughout that county and many parts of England." It was much lighter and more neatly constructed, and turned a cleaner furrow and with less resistance than any previous plough. This was "the only one worked with a pair of horses abreast, until the year 1764, when Mr. James Small, a Scotch mechanic and farmer, in Berwickshire, improved upon it by inventing the iron mould-board," and eventually "the whole machine has been formed of metal. He thus, although no mathematician, made such progress in perfecting the construction upon sound mechanical principles, that his swing ploughs are now universally employed with a pair of horses, and whip reins without a driver, and, on an average of soils, plough an acre a day with ease." Small's plough has been much improved by others, especially by Mr. Wilkie. "There are now," says Johnson (*Farmer's Encyclopædia*, 901), "a great variety of excellent forms, the best of which, for general purposes, is in Britain what is called the Scotch plough, and in Scotland the improved Scotch plough." We shall refer more particularly to the several kinds, and to the principles on which the best are constructed, in our next number. In the third number we shall probably conclude our remarks on this subject, by an exposition of the principles of *ploughing*, and the true object of ploughing matches, with reference particularly to the points involved in the challenge by our American neighbours of the State of New York, and the discussion relative thereto, which is already before our readers.

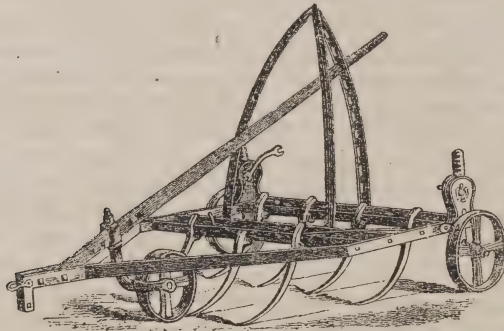
The cut at the head of this article requires a remark or two before we conclude. This cut is a correct representation of the patent prize plough of Ransome & May, the celebrated implement makers of Ipswich, England. It is constructed with all the latest improvements, and is said to be unequalled for the excellence, and ease to man and beast, with which it performs its work. It is adapted to the cultivation of the ordinary English soil, and may be used with wheels, as seen in the cut, or without them, as a common swing plough. It is made wholly of iron, except the ends of the stilts or handles. We have presented a cut of this plough to our readers chiefly to exhibit an important improvement in the construction of the beam, which we think might be adopted with great advantage in the iron plough of this country. The iron beam was objected to in England, according to Mr. Youatt, because it twigged, or vibrated, and occasionally

bent; and being difficult of repair, wood was preferred. We have observed the same evil in the imported iron ploughs, when working among the roots in Canada. This defect, Mr. Ransome has obviated, by the application of what is mechanically called the "Truss principle." The beam is split vertically, or composed of two pieces of iron rivetted together in such a manner as to brace each other, and prevent lateral vibration. The Journal of the Royal Agricultural Society of England contains the following among other observations highly laudatory of Messrs. Ransome's ploughs:—

"The beams of these ploughs are constructed on the Truss principle, which, though novel in its application to the plough, has long been appreciated by mechanics, as possessing the greatest stiffness, combined with lightness. It is this consideration which has induced those makers to abandon the use of wood, hitherto used by them for this part of the

plough, in preference to a beam of solid metal. The structure of their improved iron beam is such as to destroy lateral vibration, particularly at its root or juncture with the body of the plough; it admits also of a neat and powerful fixing, as well as ready adjustment of the coulter.

"Tremor in mechanism is well known to consume power uselessly; and, in the case of the plough, vibration in the beam, though it be insensible to the eye, renders the guidance of the implement more difficult, and its work less exact. The circumstance of increased stiffness attending mere weight of matter, may have been one cause why the heavier ploughs have not unfrequently been found to require less force of draught than lighter ones, for an equal weight of soil moved; but stiffness is not incompatible with lightness, and the diminution in the weight of an implement, when perfect action is otherwise secured, must be attended with economy of power, or, what is the same thing, with a diminution of resistance, whence truer work results."



FINLAYSON'S PATENT SELF-CLEANING HARROW.

We present our readers with a cut of an English, or, as the inventor was a Scotchman, we ought perhaps to say a *Scotch* implement, of established character, and highly spoken of by those who have used it. We have no doubt that this machine, or a modification of it, would be of great service in the cultivation of many farms in Canada. It is particularly adapted to the clearing of land which has become foul with weeds. We are well aware that many implements which the farmer could not do without in England, are, either from their great cost or the form of their construction, unsuited to the wants of the Canadian cultivator. The soil of Canada is not so diversified, and is generally lighter than that of the British Islands. The form and character of our implements must therefore vary to suit the different nature of our soil. But we find that long-continued cultivation approximates our soil to that of the mother country in several of its

features. Thus it becomes advantageous and in many cases necessary to adopt English implements or improvements upon them, constructed on the same principles. We shall occasionally describe such as appear to us worthy of adoption or imitation, or from which a useful hint might be taken by some of our ingenious mechanics or farmers. The principle on which the above machine operates, is very obvious from an inspection of the cut. We insert, however, the following observations of the maker:—

"This well-known implement may be called the parent of several of the same description, which, in improved forms, have subsequently come into use. It is formed of iron, and, according to the inventor, has the following advantages:—1. From the position in which the tines are fixed, their points hanging nearly on a parallel to the surface of the land, it follows, that this implement is drawn with the least possible waste of power. 2. From the curved form of the tines, all stubble, couch, &c., that the tines may encounter in their progress through the soil, is brought to the surface, and rolled up to the face of

the tines; when it loses its hold, and is thrown off, always relieving itself from being choked, however wet or foul the land. 3. The mode by which this harrow can be so easily adjusted to work at any depth required, renders it of great value; this is done as quick as thought by moving the regulator upwards or downwards between the lateral spring; and by each movement upwards into the openings, the fore-tines will be allowed to enter the soil about $1\frac{1}{2}$ inch deeper by each movement into the different spaces, until the regulator is thrown up, when the harrow is given its greatest power, and will then be working at the depth of 8 or 9 inches. Also the axletree of the hind-wheels is moved, a space of 7 or 8 inches, by a screw through the axletree, which is turned by a small handle, so that the hind part of the harrow, by its simple mode, is also regulated to the depth at which it is found necessary to work. 4. When the harrow is drawn to the foot lands, the regulator is pressed down, and the fore-wheel is then allowed to pass under the fore bar, by which the nose of the harrow is lifted, and the points of the fore-tines will then be taken 2 or 3 inches out of the soil, which affords the means of turning the harrow with the greatest facility. 5. Being made of malleable iron, its durability may be said to be endless; whereas, if made of wood, the prime cost would be entirely lost at the end of every 5 or 6 years. Lastly, the mode of working is so easy, that any boy of 10 or 12 years of age is perfectly qualified to manage it. Next to Wilkie's brake, we consider this the most valuable of pronged implements, and think that, like Wilkie's implement, it might be substituted for the plough, after drilled green or root crops, on light soil generally. Some account of the astonishing powers of the implement, as exemplified in breaking up Hyde Park, London, in 1826, will be found in the *Gardener's Magazine*, vol. ii. p. 250.

ON THE STUDY OF NATURAL HISTORY.

The following passages from Dr. Carpenter's excellent treatise on *Vegetable Physiology*, will serve as a suitable introduction to the subject of Natural History. In making extracts for this and other departments, we shall study to select such as are, from their simplicity of expression, adapted to general readers, and for scientific accuracy and moral tendency, free from objection.

"Of all departments of science, there is perhaps no single one capable of exercising such an advantageous influence on the mind of its cultivator as Natural History. Every kind of knowledge has in it something that is valuable; for even if it be of no direct utility in the ordinary concerns of the world, the acquirement of it is a useful exercise to the mental faculties, and the possession of it may operate in a most beneficial manner on the habitual feelings, and give a corresponding direction to the whole course of life.

It is desirable to cherish correct views of the benefits of different kinds of knowledge, that those may choose most advantageously for themselves whom the necessary business of life debars from the

extended pursuit of it; and without understanding other branches of science, it may be safely affirmed that Natural History is capable of affording more to interest and instruct, more to refresh and relax the well-disposed mind, on a very slight acquaintance with it, than any other pursuit. Not a step can the learner advance in it, but he meets with wonders previously unsuspected;—not a height does he gain, from which his prospect is clearer and more extensive, but his notion of these wonders requires a yet more astonishing vastness. The more he knows, the more he desires to know; and the further he advances, the more does he perceive how much delight is yet in store for him.

"The beneficent Creator of all has not only ordained, that every part of His works should be good—should be adapted to answer its designed end, and should contribute in the highest degree of which it is capable to the well-being of His creatures; but he has made everything "beautiful in its season;" He has so formed the mind of man, that it derives pleasure from the contemplation of the glorious works around him. And it is, therefore, a worthy employment of our faculties to encourage this pleasure; and to place it upon a more solid foundation than that afforded by the mere forms and colours of the objects around us, however beautiful these may be.

"One great source of the pleasure derived from the enquiry into the structure and mode of existence of the living beings around us, arises from the beautiful adaptation of their parts to each other, and of the whole to the place it has to occupy, which we can easily trace in every one. The philosopher who studies the motions of the heavenly bodies, and the station of this earth among them, traces these adaptations no less clearly; but it requires profound and long-continued study to be able to comprehend them aright. The naturalist, however, can discern them with far less research, in every plant that grows, in every animal that breathes; and he meets with a constant variety, which prevents him from growing weary of the pursuit.

"Yet the young are too frequently kept in ignorance of the wonders and beauties around them; and whilst encouraged to learn languages, and read many books, they remain unacquainted with the bright volume of Creation, the pages of which are daily and hourly unrolled before them, "written," to use the impressive words of Lord Bacon, "in the only language which hath gone forth to the ends of the world, unaffected by the confusion of Babel." But these pages are not to be read without some study: the alphabet and grammar must be learned, in order that their beauties may be rightly comprehended: and those who are entering upon the enquiry, need to be rightly directed by those who are more advanced.

"Natural History has been too generally shunned, as a science of hard names and intricate classification, by those whose minds are occupied with the necessary employments and cares of the world, and who seek in the pursuit of knowledge a source of refreshment and relaxation. But the objects of its several departments are not commonly understood. The study includes the examination of the structure, habits, and mode of existence, of all the living beings which so thickly people the surface of the globe;

and it is only in order to become acquainted with these more readily, that the naturalist arranges or classifies them, placing those together which have most in common, and separating these from others, which are widely different. Classification, therefore, is not the object of Natural History, but a means of gaining that object; and it is very easy to enter upon many interesting enquiries without the slightest knowledge of it. The structure and actions of man, for example, may be examined in the greatest detail, without knowing anything of his place in the general scale of being (although such knowledge will often shorten the student's labour); and other kinds of animals and plants may be observed in the same manner. In fact, several of the most valuable and interesting observations we possess, upon the habits and actions of particular animals, were made by those who devoted themselves almost exclusively to that special object. Thus it is scarcely out of the power of any one to contribute something to the general stock of knowledge; still less, then, can any be prevented from adopting some department of this pursuit, for the health and invigoration of their own minds."

THE TEMPERATURE OF THE SOIL.

"O ye Fire and Heat, bless ye the Lord: praise him and magnify him together."—*The Benedicite.*

It is not only by the properties in respect to heat of the ocean, or by those in respect to heat and vapour of the atmosphere, by marine currents, by the winds, by rains, and by the dew, that the processes of vegetation are influenced, and the geographical distribution of plants modified; another vivifying element not less important in its agency is the *native temperature of the soil.*

There is a heat proper to the mass of the earth, increasing from a short distance beneath its surface downwards at the rate of about one degree of Fahrenheit's thermometer for every fifteen yards. This central heat becomes sensible in excavations reaching anywhere beyond a certain depth, and in some mines it is oppressive.

It is a constant heat. It does not by the slightest appreciable quantity vary from year to year, or season to season. Observations were made in 1671, by Cassini, on temperature of the air in certain closed cellars beneath the Observatory of Paris; they were repeated in 1730 by La Hire, and during the last forty-five years thermometrical apparatus of great sensibility have been fixed in these cellars and constantly observed; the temperature thus observed through a period of 175 years has never varied by more than one quarter of a degree from 11°·82 of the centigrade thermometer, or 53°·37 of the thermometer of Fahrenheit.

There is, however, a temperature proper to the surface soil which is influenced at once by this constant subterranean heat and by the superficial absorption, and the radiation of the solar heat. This is a variable temperature. It extends to different depths, varying from 40 to 60 or 80 feet on the continent of Europe, but being found in tropical regions at the depth of a single foot. If a surface be imagined to pass through all those points beneath the earth's surface, to which the surface heat is propagated, and to which, therefore, a variable

temperature extends, it will be that called "*the surface of invariable temperature.*"

Theory and experiment agree in indicating the temperature of any point in this surface of invariable temperature to be the mean temperature of that point in the earth's surface which is immediately above it.*

It is not a regular or even surface, but one having elevations and depressions dependent partly upon corresponding elevations and depressions of the earth's surface, and partly upon irregularities in the strata which constitute the earth's crust. Whilst beneath this surface there reigns an invariable temperature, a constant change is taking place above it, and that of a very remarkable kind.

From experiments made in Edinburgh, Zurich, and Strasburg, it appears that, during the winter months, January, February, and March, the temperature increases uniformly as we descend from the earth's surface to the surface of invariable temperature;—that in the months of April and May there comes, with the spring, a sudden and remarkable elevation of the temperature,† extending to a depth of about two feet into the soil, but continually increasing as we further descend, so that there is a depth (and a surface) of minimum temperature, situated between the surface of the earth and the surface of invariable temperature.

As the year advances, this surface of minimum temperature sinks continually deeper and deeper, until, in the month of August, it reaches the surface of invariable temperature and identifies itself with it. In this month, however, the mean temperature at the surface has begun to diminish, and beneath the surface it is reduced at different depths, more nearly to a state of uniformity, which state it actually attains in September, to the depth of 10 or 20 feet. It is in the months of October and November that this uniformity changes into an increasing temperature. And the temperature, which in the preceding months had increased from the depth of 15 or 20 feet to the surface of invariable temperature, now becomes throughout that space uniform.

Although the temperatures of the atmosphere and the soil are dependent for their variations on the same causes, yet in their amounts they are essentially different. During the day the temperature of the soil is much higher than that of the air ‡ At night it is sometimes from 14° to 18° below it. The relations by which these changes in the temperature of the soil are connected with atmospheric causes and the solar radiation, it is not easy to trace;—who can, however, doubt that when, in the months of March and April, the temperature of the soil so suddenly and so rapidly ascends, it is to meet the first efforts of vegetation—the bursting of the germ and the putting forth of the bud and blossom?

The black colour of the earth, favourable as it is to the absorption of heat, is one of the causes which

* Thus the mean temperature of Paris is 10°·6 of the centigrade thermometer, which differs but one degree from the invariable temperature of the cellars under the Observatory.

† In the experiments of Mr. Fergusson at Edinburgh, in 1817, that temperature at a depth of one foot, whose mean in February, was 37°·04, became in March 30°·4, and April 62°·96. No variation of the temperature of the surface soil comparable to this, as to its amount, and the shortness of the time in which it is brought about, occurs at any other season of the year.

‡ At Paris, the temperature of the soil is not unfrequently 112° F., and, in the summer of 1824, it attained 149° F.

contribute to give to the soil a temperature higher than that of the air above it; were some limit not indeed placed to the operation of this cause, the moisture of the soil might everywhere be transferred to the atmosphere. That limit is found in the fact, that, although black be the colour most favourable to the *absorption* of heat, it is also that most favourable to its radiation; and since, during the whole day, whilst the earth is in the act of receiving heat from the sun, it is also in the act of radiating it, in some degree unknown to us, into space, and since this process of radiation is going on also all night, it follows that the radiating properties of a body may have a greater influence to keep down its temperature than its absorbing properties have to raise it; and thus we may understand why vegetable mould, which is commonly the darkest, is at the same time the most humid; and why the gardener white-washes the wall against which his fruit-trees are nailed; not that reflecting the heat, it may be cooled, but that, radiating it ill, it may remain hot,—why regions of sand are parched with heat, and why the Almighty, in his wisdom and goodness, has given to the animals of cold regions a white covering, and one of a darker colour to those within the tropics; man himself being, in this respect, a memorable example.

Thus, too, that is obviously no visionary analogy which the covering of animals presents in arctic regions, to the covering of the earth's surface; in winter a white mantle of snow is thrown down upon it, and bodies of animals are enveloped in thick white furs. When summer comes, under the form of a single day, of from five to six months' duration, and the clothing of animals is made thinner and lighter, its colour also is changed, and the covering of snow is withdrawn from the earth.

"For are we not all His, without whose care
Vouchsafed, no sparrow falleth to the ground,
Who gives his Angels wings to speed through air,
And rolls the planets through the blue profound."
Wordsworth.

—Moseley's *Astro-Theology*.

THE DISCOVERY OF HERCULANEUM.—In noticing the wells of ancient Italy, we may refer to a circumstance, which although trivial in itself, led to the most surprising discovery that has ever taken place on this globe, and one which in the interest it has excited is unexampled. In the early part of the eighteenth century, 1711, an Italian peasant while *digging a well* near his cottage, found some fragments of colored marble. These attracting attention, led to further excavation, when a statue of Hercules was disinterred, and shortly afterwards a mutilated one of Cleopatra.—These specimens of ancient art were found at a considerable depth below the surface, and in a place which subsequently proved to be a temple situated in the centre of the ancient City of *Herculaneum*! This city was overwhelmed with ashes and lava, during an eruption of Vesuvius, A. D. 79, being the same in which the elder Pliny perished, who was suffocated with sulphurous vapors, like Lot's wife in a similar calamity. *Herculaneum* therefore had been buried 1630 years! and while every memorial of it was lost, and even the site unknown, it was thus suddenly, by a resurrection then unparalleled in the annals of the world, brought again to light; and streets, temples, houses, statues, paintings, jewelry, professional implements, kitchen utensils, and other articles connected with ancient domestic life, were to be seen arranged, as when their

owners were actively moving among them. Even the skeletons of some of the inhabitants were found; one, near the threshold of his door, with a bag of money in his hand, and apparently in the act of escaping.

The light which this important discovery reflected upon numerous subjects connected with the ancients, has greatly eclipsed all previous sources of information; and as regards some of the arts of the Romans, the information thus obtained may be considered almost as full and satisfactory as if one of their mechanics had risen from the dead and described them.

Among the early discoveries made in this City of *Hercules*, (it having been founded by, or in honor of him, 1250, B. C.) not the least interesting is one of its public wells; which, having been covered by an arch, and surrounded by a curb, the ashes were excluded. This well was found in a high state of preservation—it still contains excellent water, and is in the same condition as when the last females retired from it, bearing vases of its water to their dwellings, and probably on the evening that preceded the calamity which drove them from it for ever.—*Ewbank's Hydraulics*.

OUR WONDROUS ATMOSPHERE.—The atmosphere rises above us with its cathedral dome, arching towards the heavens, of which it is the most familiar synonyme and symbol. It floats around us like that grand object which the apostle John saw in his vision, "a sea of glass like unto crystal." So massive is it, that when it begins to stir it tosses about great ships like playthings, and sweeps cities and forests like snowflakes to destruction before it. And yet it is so mobile, that we have lived years in it before we can be persuaded that it exists at all, and the great bulk of mankind never realize the truth that they are bathed in an ocean of air. Its weight is so enormous, that iron shivers before it like glass; yet a soap-bell sails through it with impunity, and the tiniest insect waves it aside with its wing. It ministers lavishly to all the senses. We touch it not but it touches us. Its warm south winds bring back colour to the pale face of the invalid; its cool west winds refresh the feverish brow, and make the blood mantle in our cheeks; even its north blasts brace into new vigor the hardest children of our rugged clime. The eye is indebted to it for all the magnificence of sunrise, the full brightness of mid-day, the chastened radiance of the gloaming, and the clouds that cradle near the setting sun. But for it, the rainbow would want its "triumphal arch," and the winds would not send their fleecy messengers on errands round the heavens. The cold ether would not shed its snow-feathers on the earth, nor would drops of dew gather on the flowers. The kindly rain would never fall, nor hail-storm nor fog diversify the face of the sky. Our naked globe would turn its tanned and unshadowed forehead to the sun, and one dreary, monotonous blaze of light and heat dazzle and burn up all things. Were there no atmosphere, the evening sun would be in a moment set, and, without warning, plunge the earth in darkness. But the air keeps in her hand a sheaf of his rays, and lets them slide but slowly through her fingers; so that the shadows of evening gather by degrees, and the flowers have time to bow their heads, and each creature space to find a place of repose.—*Quarterly Review*.

VENTILATION.—In airing a room, both the upper and the lower parts of the window should be opened, as the bad and heated air, from its lightness, will pass out at the top, and the fresh, cool air come in at the bottom.

Prosperity is no just scale; adversity is the only true balance to weigh friends.

Domestic.

In this department of the *Agriculturist* we shall endeavor to furnish instruction and entertainment for our female readers. By the latter expression we would not be understood to mean the trifling nonsense and sickly sentimentalism which fills so many of the *Magazines* of the day devoted to their reading. In all our selections for this department we shall study the *useful*. We shall be very glad to receive contributions from the pens of some of our fair patrons. We are aware that it is not an easy thing for persons unaccustomed to the practice of recording their thoughts on paper, to write for publication. But we know also that there are many women among the wives and daughters of our country, who have had the advantage of education and enlarged experience, and who could easily find the leisure to communicate useful hints and advice to their less favored sisters. Will not some of them try? We shall be happy to afford the medium, and every assistance in our power.

Lines at my Sister's Grave.

By Major G. W. Patten.

Beside thy dewy grave I pass,
(A fresh and flowery mound,
Sunlight is glancing on the grass,
And the red-breast chirps around ;
While from afar the city's hum
Steals gently on the ear :
And yet for me is Nature dumb !
Thy voice I cannot hear.

Thou told'st me from a distant land,
I ne'er should be forgot ;
I come—e'en at thy side I stand—
And yet thou heed'st me not.
Where are those accents which were heard
So soft on music's breath ?
Sister !—I hear no answering word.
Is this?—Yea ! THIS is death !

Beside my Father's aged form
They've laid thee breast to breast :
Too bitter was the world's bleak storm ;
But *both* are now at rest.
In life united—Oh! with such
Affection undefil'd!
In death 't is well, their coffins touch—
The Father and the Child.

Thou, sister, had'st but little strength
To tread life's thorny track :
So calmly dost thou sleep at length,
'Twere sin to wish thee back ;
The music of thy gentle tone
Tho' to my bosom dear,
And tho' my heart is sad and lone,
I would not have thee here.

For me is still life's stirring tide—
The battle and the storm—
The wave where warring navies ride—
The field where squadrons form !
But *thou* with no long watch to keep—
No dream at morn to tell—
Freed one !—Thine is an envied sleep !
Sweet Sister ! Fare thee well !

ITEMS FOR HOUSEKEEPERS.—The following items may appear insignificant. But they are not. Could I have had them in a written form some years ago, and not have been under the necessity of learning nearly all by experience, which is slow and dear work, it would have been quite an advantage to me. A novice will need them all ; an adept may find something new.

To sweep the floor, in winter, of a room without fire or carpet, sprinkle snow upon it ; 'tis the best preventive of dust.

When cleaning a room used for company, it is best to place the wood in fireplace or stove, with plenty of kindlings all ready, so that a bright, blazing fire can be had at any time, in two minutes. Try this but once, and you will not again want the dirt, trouble and sometimes confusion, consequent upon carrying wood and fire after company arrives.

A large house, especially with a large family to make dirt and clean it, should not be without three or four brooms. One for each room would not be superfluous.

If you buy a broom, lopsided, with long ends extending out, nothing is more easy than to clip it with the axe ; while nothing is more foolish, than to sweep with it so until worn out, complaining all the while of the mean brooms, broom-makers and store keepers.

It is well to have a button or other fastening to the door of each room. Sickness, dressing or some other cause will bring them into requisition.

Paint, washed with a solution of saleratus in water, will not rub off. A brush, such as the common blacking brush, is often preferable to a cloth, in the cleaning of doors, &c.

Varnished furniture may be washed, and yet retain its gloss, by following the wet cloth immediately with a dry one, and rubbing until the moisture is all evaporated.

Every woman having broom corn, can manufacture the best of kitchen brushes. Place together a few pieces neatly, clip the top and bottom, scald the upper part until quite soft, then wrap and tie tightly with strong cord. Work is considerably facilitated by having a kitchen furnished with three or four of these simply made articles. One for sink—hanging on a nail over it—one for stove—hanging near it also—one for cupboard and shelves, and perhaps one for brushing around the feet of, and under the stove, benches, &c.

These are equally useful for cleaning rooms. For scouring, some use cobs, in preference to rags.

Brick-dust or some other, scouring material should always be in readiness.

By all means, spend *five* minutes in washing your brass candlesticks in strong vinegar, instead of *thirty*, in rubbing them with brick-dust.

For beating the white of eggs, use a peachtree switch doubled, instead of a knife, and the work will be done in one-fourth of the time.

Spreads, made of glazed calico for the purpose, and used in place of white counterpanes and light quilts, save a great amount of that severest of all labor—washing.

Bolster slips should be made open at each end, so that when the one on the front side becomes somewhat soiled, the other can be turned. It is unnecessary to make them longer than usual—the bolster can be turned and the slip drawn over.

Every woman at all in the habit of writing—and there are very few who do not sometimes write memorandums of business or goods, social or business notes—should have a stand drawer in some unfrequented corner, furnished all the while with pen, pencil, paper, &c., unless a daughter or sister in the family keeps

such paraphernalia always on hand. Also, if a woman can do no more, she should practise the writing of her name until it can be done handsomely; then after signing a deed or other writing, the blood will not mount to the cheek upon a view of the signature.

No doubt many a dollar is squandered by neglecting the use of memoranda.

For a woman who rides, the pocket ought to be placed in the left side of the dress, as there is danger of losing the articles it contains when placed in the right.

If, upon being out, dust has alighted upon your bonnet, flit it off with a handkerchief before putting it away.

If you consult neatness, make the top bindings of skirts narrow; if health and comfort, make the fastenings of hook or buttons, instead of strings.

In making the common slab bonnet, care should be taken to cut the pasteboard small enough to move freely in and out of the cases, or the calico will soon cut, and as the bonnet always wears out first at the hinder extremity of the slabs, the lining should be allowed to extend two or three inches beyond.

If the common coat sleeves be gathered both over and under the elbow, and changed so soon as they wear thin on the under side, they will last about as long as the dress. And, in addition to this, should a half hour be taken to make the hem a little deeper, when it begins to scuff, the whole dress will wear much longer.

This is not only taking a stitch in time to save nine stitches, but time and money are also saved. Any sleeves being cut alike on both sides, can be turned.

If a silk apron be made at top with a hem and string through it, cutting can be prevented while not in use, by drawing it full length upon the ribbon before folding.

The sleeves of dresses, worn in the winter a long time without washing, ought to be turned very frequently, perhaps every night, in order to let the noxious matter which has been accumulated from the skin, pass off. I have known the itch to be the consequence of the neglect of this.

Beds too, to prevent their becoming filthy and unhealthy, should be aired half an hour or so, every morning. By putting them to air first thing in the morning, they will not often cause delay.

A good comb cleaner can be made and *should* be, by boring a hole in some back porch pillar, or wall, and wedging in tightly a nice bunch of horse hair.

MRS. M. NICHOLS.

PEACH-PICKLES.—Take one gallon of good vinegar and add to it four pounds brown sugar; boil this for a few minutes and skim off any scum that may rise; then take clingstone peaches that are fully ripe, rub them with a flannel cloth to remove the down upon them, and stick three or four cloves in each; put them into a glass or earthen vessel, and pour the liquor upon them boiling hot. Cover them up and let them stand in a cool place for a week or ten days, then pour off the liquor and boil it as before; after which, return it boiling to the peaches, which should be carefully covered up and stored away for future use.

HOW TO PREPARE SUPERIOR MINCE-MEAT FOR PIES.—Take stoned raisins, currants, sugar, and suet, of each 2 lbs.; Sultana raisins, boiled beef (lean and tender), of each 1 lb.; sour or tart apples 4 lbs.; the juice of two lemons; the rind of one lemon chopped very fine; mixed spice $\frac{1}{4}$ lb.; candied citron and lemon-peel, of each, 2 oz.; brandy one gill; and chop the whole very fine. The preparation may be varied by adding other spice or flavoring, and the addition of eggs, or the substitution of chopped fowl or veal, for beef, according to fancy or convenience.

SCIENCE IN THE KITCHEN.—Professor Liebig, in a letter to Prof. Silliman, says:—"The method of *roasting* is obviously the best to make flesh the most nutritious. But it does not follow that boiling is to be interdicted. If a piece of meat be put into *cold* water, and this heated to boiling, and boiled until it is "done," it will become harder and have less taste, than if the same piece has been thrown into water already boiling. In the first case the matters grateful to the smell and taste, go into the extract--the soup; in the second, the albumen of the meat coagulates from the surface inward, envelopes the interior with a layer which is impregnable to water. In the latter case, the soup will be indifferent, but the meat delicious."

CORN BREAD.—We are in the daily habit of eating corn bread made after the following recipe, by our good landlady, Mrs. Norton, of Astoria. It is equal to anything we ever tasted:—To one quart of sour milk add two teaspoonfuls, well stirred in, of finely pulverised salaratus, two eggs well beaten, one table-spoonful of brown sugar, and a piece of butter as large as an egg. Salt to suit the taste, and then stir in the meal, making the mixture about as stiff as for pound-cake. Now comes the great secret of its goodness. *Bake quick*—to the color of a rich, light-brown. Eat it moderately warm, with butter, cheese, honey, or sugar-house molasses, as most agreeable to the palate.—*American Agriculturalist*.

DYEING.—Secrets in dyeing are more easily kept than secrets in most other trades. Dyes usually require an intermediate substance called a "mordant." This word means a biter. This substance bites cloth and bites the dye, and so keeps them both together. If you dye a piece of cloth with any color without using a mordant, the color will come out on the first washing. The great secret of dyeing is to find out what particular mordant is adapted to each particular dye; for different mordants will produce different colors, even with the same dye. If you dip a piece of cloth dant, and then dye it with cochineal, it will prove a solution of alum, which is a very common mordant, and then dye it with cochineal, it will be a perfect black. Sometimes a color will be produced different from that of either the mordant or the dye. If you boil a piece of cloth in a blue mordant, and then dip it in a yellow dye, the color produced will not be either a blue or yellow, but a perfect green.—*Exchange*.

IMPROVED STRAINER FOR PAILS.—Mr. Wm. Cooley, of Geneva, N. Y., has invented and applied for a patent for a new and useful improvement of attaching a strainer to milk pails, which appears to be as valuable as the improvements which have lately been made on churns. His plan is to have the strainer fit on to a tube or spout on the pail by a screw or slide, so that it can be put on and taken off at pleasure, thus rendering the strainer easier cleaned, and at the same time one strainer will answer a number of pails better than a sieve and at one-fifth the expense.

TO PREVENT THE RUNNING OF CANDLES.—If you wish to prevent the running or gutting away in an hour or two of an ordinary candle, place as much common salt, finely powdered, as will reach from the tallow to the bottom of the black part of the wick, when, if the same be lit, it will burn very slowly all night, yielding a sufficient light for a bed-chamber; the salt will gradually sink as the tallow is consumed, the melted tallow being drawn through the salt and consumed in the wick.

Miscellaneous.

WHAT IS EDUCATION?

BY W. E. CHANNING, D.D.

The great end of education is not to train a man to get a living. This is plain, because life was given for a higher end than simply to toil for its own prolongation. A comfortable subsistence is indeed very important to the purposes of life, be this what it may. A man half-fed, half-clothed, and fearing to perish from famine or cold, will be too crushed in spirit to do the work of a man. He must be set free from the iron grasp of want, from the constant pressure of painful sensations, from grinding, ill-requited toil. Unless a man be trained to get a comfortable support, his prospects of improvement and happiness are poor. But if his education aims at nothing more, his life will turn to little account.

To educate a man is to unfold his faculties, to give him the free and full use of his powers, and especially of his best powers. It is first to train the intellect, to give him a love of truth, and to instruct him in the processes by which it may be acquired. It is to train him to soundness of judgment, to teach him to weigh evidence, and to guard him against the common sources of error. It is to give him a thirst for knowledge, which will keep his faculties in action through life. It is to aid him in the study of the outward world, to initiate him into the physical sciences, so that he will understand the principles of his trade or business, and will be able to comprehend the phenomena which are continually passing before his eyes. It is to make him acquainted with his own nature, to give him that most important means of improvement, self-comprehension.

In the next place, to educate a man, is to train the conscience, to give him a quick, keen discernment of the right, to teach him duty in its great principles and minute applications, to establish in him immovable principles of action. It is to show him his true position in the world, his true relation to God and his fellow-beings, and immutable obligations laid on him by these. It is to inspire him with the idea of perfection, to give him a high moral aim, and to show how this may be maintained in the commonest toils, and how every thing may be made to contribute to its accomplishment.

Further, to educate a man in this country, is to train him to be a good citizen, to establish him in the principles of political science, to make him acquainted with our history, government and laws, to teach him our great interests as a nation, and the policy by which they are to be advanced, and to impress him deeply with his responsibility, his great trust, his obligations to disinterested patriotism as the citizen of a free state.

Again, to educate a man is to cultivate his imagination and taste, to awaken his sensibility to the beautiful in nature and art, to give him the capacity of enjoying the writings of men of genius, to prepare him for the innocent and refined pleasures of literature.

I will only add, that to educate a man is to cultivate his powers of expression, so that he can bring out his thoughts with clearness and strength, and exert a moral influence over his fellow creatures. This is essential to the true enjoyment and improvement of social life.

According to these views, the labouring classes may be said to have as yet few means of education, excepting those which Providence furnishes, in the relations, changes, occupations and discipline of life. The great school of life, of Providence, is indeed open to all. But what, I would ask, is done by our public institutions for the education of the mass of the people? In the mechanical nature of our common schools, is it ever proposed to unfold the various faculties of a human

being, and to prepare him for self-improvement through life? Indeed, according to the views of education now given, how defective are our institutions for rich as well as poor, and what a revolution is required in our whole system of training the young.

The great aim of philanthropy should be, that every member of the community may receive such an education as has been described. To bring forward every human being, to develop every mind, is the great purpose of society. I say of society, not of government, for government is a mere instrument for holding society together, a condition of its existence, and not the great power by which its ends are to be accomplished. One of the pernicious doctrines of the day, very pernicious to the working classes, is, that government is to regenerate society, and exalt the individual to his true dignity. Government enables us to live together in society, and to make efforts for our own and others' welfare. But social progress depends on the spring in each man's breast, and not on the operations of the state. Government may be compared to the foundation and walls of a manufactory, which enclose and protect not the moving and guiding power, but the necessary condition of their action. The people must not look to it for what their own energies can alone effect. * * * *

THE SIMPLIFICATION OF KNOWLEDGE.—All great truths, whether of morals or physics, are marked by their simplicity. Although not an absolute test, since false principles or paradox often seek shelter under the same forms; yet we may affirm, that in proportion as truths become more complete and comprehensive, so are the expressions appropriate to them more simple and determinate. And this is especially the case in regard to physical knowledge. Though facts have wonderfully multiplied, so as to encumber the mind of the student, and seemingly to discover the material world into endless fractional parts, yet has the discovery of new relations and connections tended unceasingly to reduce the facts under more general laws, and to give to science a unity and simplicity of a higher kind at every great step in its progress. To what future point this process of integration may proceed, we hardly venture to surmise. We may at least express our belief that we stand but on the margin of what science will hereafter attain in the union and simplification of all the great laws of the natural world.—*Quarterly Review*.

CAUTION NECESSARY IN INFERENTIAL REASONING.—Nothing is more characteristic of a manly and cultivated understanding, than the habit of suspending opinion in doubtful cases, and of abstaining from unwarrantable inferences. A wise man is induced to suspend his inferences by the modest recollection of his ignorance, and the fallibility of his judgment. On the contrary, both weak minds and ardent minds,—the former from fear, the latter from presumption, fix upon the first inference which the nature of an effect may suggest.

In philosophical inquiries, inferences should follow the most complete and satisfactory induction; and where, from the nature of the case, this complete and satisfactory induction cannot take place, we should ingenuously confess our ignorance. The chief source of false systems of natural philosophy has been, that probable or plausible conjectures have been admitted in place of just inferences; such conjectures, how plausible soever they may seem, ought merely to be employed hypothetically to suggest and guide experiments.—*Taylor's Elements of Thought*.

BOOKS.—Books are not only the friends of individual solitude, but also of the family circle. They contribute to bind together, to fill up deficiencies, to cover flaws, to make it closer and brighter and firmer. By engaging the thoughts, improving the taste, and exciting the kindly feelings of the members of a household, they render each one more considerate and gentle, and more useful and agreeable to the rest. They insensibly introduce mental grace and refinement, and not only so, but refinement and grace of manners, wherever they become favorites. Show us a family in which the best and purest authors are loved and read, and we care not in what nominal rank of society they are stationed, or what may be their wealth, or want of it, or what may be their daily avocations; but we will answer for them, that vulgarity and coarseness have no place at their meetings, and that domestic peace is a dweller among them.

The domestic services which books are qualified to perform, are particularly valuable when the business and bustle of day-light are over, and the active interests of life are hushed into slumber under the brooding wings of night. The master of the house comes home from his office, counting-room, or workshop, the children come home from their schools, or places of employment, the mother's household duties are done, and they sit down together. What shall they do with the impending hours to keep them from hanging heavily. We suppose that there are some families, in town and country, who find, if there is no party to go to, or no place of public amusement to offer its attractions, such as they may be, or nothing particularly interesting to discuss in the events of the day, or the character or fortunes of their neighbours, that the long winter evenings, by which we mean the evenings of six months in our year, are apt to move off rather slowly and wearily. This would not be so, we are persuaded, if they would just call in to their assistance one or two of the friends which they would find in good books. How much more swiftly and pleasantly, not to say profitably, the hours would then glide away!

What honest friends, what sympathising companions, what excellent instructors they are! How can a man be really solitary when these and nature are with him and around him? How can it be said of him, that he is without society, even though no being of flesh and blood should be near him, when he can sit down in his closet with the best and brightest minds which ever dwelt and beamed in residences of clay; with the master spirits of all time; with the souls of the mighty living and the mighty dead, the dead who are yet living; with ancient and modern lawgivers, philosophers, and bards; with moralists and satirists; with civilians and divines; with navigators and travellers; with the explorers of nature and the professors of art; with martyrs; with Apostles of Christ; with prophets of God? Who shall say that with these he is alone? Who shall say that in his sorrow he is without consolers; that in his trials and perplexities, and the various conditions of his mind and feelings, he is without spiritual advisers?—*Greenwood.*

FEMALE INTREPIDITY.—One of the guides described to us the adventure of a French lady called by him a demoiselle, and supposed to be nearly forty years of age, who, about five years ago, came to Chamouni with a determination to ascend Mont Blanc. The difficulties were represented to her as much too great for any lady to encounter, and especially one who did not appear to be strong and robust, though in good health. She persisted, however, at all hazards, and an unusually strong and numerous party of guides and attendants were accordingly provided to accompany her. It was in the month of August; the weather was remarkable, and there were two other parties; one of a Polish

gentleman with five guides, another of an English gentleman with six, and the French lady with eight. They all kept distinct and separate from each other, the Pole first, the Englishman next, and the French lady in the rear of all. Long before they reached the Grand Mulets—the first halting place in the ascent, and where it is usual to sleep in the open air or in a tent on the first night—the lady fainted repeatedly from fatigue and dizziness, and could only be restored with great difficulty by repose and an occasional draught of wine. When she recovered, her only answer to all the remonstrances of the guides was that she must go on to the summit at all hazards. They would then proceed a little further, and seeing her again droop would urge her not to proceed, as in all probability she would die, and they would have to answer for her life. Still she persisted in being taken to the top of the mountain, dead or alive. They accordingly fastened a rope round her waist, and a man holding her on each side, she was literally dragged up a portion of the way. On reaching the summit, she asked for wine, and drank a bumper to the health of her guides, after which she requested them to form a square, and caused herself to be lifted on their shoulders, where she remained some minutes, and waving her handkerchief in the air, exclaimed, “Viva la belle France!” boasting that she had been higher up above the earth than the native of any other country in Europe, at last! The descent was of course less fatiguing than the ascent, but the lady became at length so helpless by excitement and exhaustion, that it was necessary to take the greatest care to prevent her falling asleep, and the anxieties of the guides for her safety continued to increase all the way, until they landed her once more in bed at the Hotel Chamouni.—*Buckingham's Travels.*

FEMALE EDUCATION.—It was a judicious resolution of a father, as well as a most pleasing compliment to his wife, when on being asked what he intended to do with his girls, he replied; “I intend to apprentice them all to their excellent mother, that they may learn the art of improving time, and be fitted to become, like her, wives, mothers, heads of families, and useful members of society.” Equally just, but bitterly painful, was the remark of the unhappy husband of a vain, thoughtless, dressy slattern: “It is hard to say it, but if my girls are to have any chance of growing up good for anything, they must be sent out of the way of their mother's example.”

USEFUL FACTS TO BE KNOWN.—Water, when hot, dissolves more salt, sugar, &c., than when it is cold.—Hence the utility of pouring hot salt and water over articles to prepare them for pickling; and hot syrup upon preserved fruits; for the salt or sugar that would crystalize as the liquid cooled, is taken up by the fruit, &c., which by being heated also, absorbs more than it could be made to do if it were put on cold.

ON LISTENING TO EVIL REPORTS.—The longer I live the more I feel the importance of adhering to the rule which I have laid down for myself in relation to such matters:—“1. To hear as little as possible whatever is to the prejudice of others. 2. To believe nothing of the kind till I am absolutely forced to it. 3. Never to drink into the spirit of one who circulates an ill report. 4. Always to moderate, as far as I can, the unkindness which is expressed towards others. 5. Always to believe that, if the other side was heard, a very different account would be given of the matter.—*Corus's Life of Simeon.*”

PAINTED TEA.—Professor Reid, of New York, says that painted green tea may be most easily detected by putting a small quantity of it in a glass of cold water, letting it remain for a few minutes, and then stirring it.

Editors' Notices, &c.

- J. M., Fergus.—The back numbers have been sent to Mr. J. C. Raleigh as you request. The name was placed on a wrong list by mistake.
- S. T., Blenheim.—Yours of the 19th ult. received. All the numbers since June have been sent to Galt P. O. as you direct. There have been but five numbers published since June. You will get three numbers of the next volume, and may obtain the remainder complete for 3s. 9d. As there will be a continuation of several interesting articles through a large portion of the volume for 1849, and an index at the end of the year, you will find it worth your while to order the whole volume.
- W. S., Sharon, received.—To do as you request would be a deviation from a rule which we have determined to adhere to, without respect to persons, not because we have any doubt that in many cases the promise would be attended to, but because we cannot spare time or take the trouble to keep a set of books, such as the credit system requires, to prevent confusion. It cost us an immense deal of labour the past year, and led to many errors and considerable loss. When a subscriber pays, and his name is placed on the proper list, the troublesome part of the matter is at an end. As you are entitled to three numbers more, if you pay before 1st March, the whole of the next volume will be sent to you.
- R. L. D.—Your mathematical question will be inserted in the second number. As to the other points of your letter we had anticipated you.
- C. J. B., Gore.—Your request has been attended to. The communication will appear in our next number, with such remarks as we can make upon it. The subject is important, and we are very glad the discussion of it has been started. Useful facts will be elicited.
- J. P., Churchville, received.
- J. S., London, received.
- J. W., Chinguacousy, do.

TORONTO MARKET.

DECEMBER 28, 1848.

Flour, per barrel of 196 lbs.	17	6	@	21	6
Wheat, per bushel.	4	0	@	4	3
Potatoes, per bushel.	2	6	@	3	0
Pease, per bushel, 60 lbs.	2	0	@	2	3
Oats, per bushel, 34 lbs.	0	11	@	1	0
Bacon, per cwt.	35	0	@	40	0
Hams, per cwt.	0	5	@	0	6
Butter, in kegs, per lb.	0	6	@	0	7
Butter, (fresh) per lb.	0	7	@	0	9
Pork, per 100 lbs.	12	6	@	17	6
Beef, per 100 lbs.	15	0	@	20	0
Turkeys, each	2	6	@	3	0
Fowls, per couple	1	0	@	1	3
Eggs, per dozen.	0	7	@	0	9
Hay, per ton	50	0	@	65	0
Straw, per ton	25	0	@	30	0

Our Market is in a very inactive state for all descriptions of grain, as is usual at this season. There are

scarcely any deliveries of wheat from the farmers, and prices must be considered merely nominal. This will probably continue the case till the opening of the navigation, when prices will be materially influenced by the state of the British markets, which are likely to be much depressed by excessive importations.

Our Meat market at Christmas was, as usual, abundantly supplied, and the quality was excellent. We had an opportunity of taking only a cursory view; but a heifer bred and fattened by the Hon. Adam Ferguson, particularly struck us as being exceedingly fine, and highly creditable to that zealous and enlightened promoter of our colonial Agriculture. Our readers at home have no idea of the superior stock which this country can, by proper management, produce. We may also mention the excellence of the sheep, particularly those bred by Mr. Miller, of Markham, who is distinguished in this line. Mr. Moyle, of Brantford, sent some sheep of very superior quality; and we have much pleasure in directing the attention of our readers to that gentleman's article on sheep husbandry in another part of our paper.

MONTREAL MARKET PRICES.

Tuesday, Dec. 22nd, 1848.

Wheat	per minot	4	6	a	4	9
Oats	"	1	0	a	1	3
Barley	"	2	0	a	2	3
Peas	"	2	6	a	2	9
Buckwheat	"	1	8	a	2	0
Rye	"	2	9	a	0	0
Flaxseed	"	4	0	a	4	6
Potatoes	per bushel	2	0	a	2	6
Beans, American	"	4	0	a	5	0
Do. Canadian	"	6	0	a	6	8
Honey	per lb.	0	4	a	0	5
Beef	"	0	2	a	0	6
Mutton	per qr.	5	0	a	10	0
Lamb	"	1	7	a	3	9
Veal	"	5	0	a	10	0
Pork	per lb.	0	3	a	0	5
Butter, fresh	"	0	10	a	1	0
Butter, salt	"	0	9	a	0	0
Cheese	"	0	4	a	0	4

NEW-YORK MARKETS.

New-York, Dec. 23—6½ p. m.

Moderate demand for *Flour*, but prices firm; there is not much in market; sales, 3,500 barrels, at \$5.31 to \$5.44 for common and good; for fancy and extra, \$5.75 a \$6.25. Market for *Wheat* very dull: sales, 2,000 bushels fair Genesee at \$1.23 for milling. *Wheat* market continues to tend upwards: sales at \$10.50 for old prime; \$11.25 for new; \$13.25 for old medium; \$14 for new; and, at close, there was none selling under \$11.75 and \$13 50. For old *Beef*, \$5.75 a \$6.00 and \$9.75 a \$11.

BUCKWHEAT CAKES.—The griddle on which cakes are baked should *never be touched with grease*. Firstly, because it imparts a rancid taste to the cakes. Secondly, if a cooking stove be used, it fills the kitchen, if not the whole house, with a smell of burnt grease—to say nothing of the parade, and boasting to one's neighbor by betraying what we are to have for breakfast. Wash the griddle with hot soap suds; scour with sand, and when heated for use, rub it well with spoonful of fine salt and a coarse cloth. It will then be ready to receive the cakes. After each cake is removed, the salt rubbing must be repeated. If the first does not succeed, try it again, and you will ever afterwards follow this advice of an old housekeeper.—*American Agriculturist*.

CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. 5, 1x.

GEORGE BUCKLAND, }
WILLIAM McDUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, FEBRUARY 1, 1849.

No. 2.

This number of the *Agriculturist*, and numbers 2 and 3, will be sent to all subscribers, who have paid for the year 1848, without further charge. The proprietors adopt this course, to make up the deficiency in the volume for the year just ended. The remaining 9 numbers of the volume for 1849 can be had for 3s. 9d., if paid before the 1st March next. Subscribers, who wish to discontinue, need not, therefore, return the paper, as it will not be sent beyond the third number, unless re-ordered and paid for. Three and nine pence being an inconvenient sum to remit by mail, those who intend to continue their patronage may leave the amount with their Post-Master, taking a receipt, who will, no doubt, undertake to remit to us, as soon as he gets a sum which he can enclose in a letter. Post-masters will get a copy of the *Agriculturist* gratis, as some compensation for their trouble; and we trust they all, without exception, will take an interest in promoting the success of our publication.

TRAVELLING AGENTS.—Mr. T. M. MANN is our Travelling Agent for the Eastern section of the Province; Mr. PALMER, for the Northern; and we hope soon to announce one for the Western.

LOCAL AGENTS.—Any person may act as a local agent. We hope that all those who have heretofore acted as such, will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending four subscriptions. Those sending twelve and upwards will be supplied at 3s. 9d. per copy.

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New Dry Goods & General Outfitting Establishment,

Opposite the Market, King Street East, Toronto.

THOMAS THOMPSON respectfully solicits the attention of his numerous friends throughout the country to his large and well-assorted Stock of

STAPLE AND FANCY DRY GOODS,

particularly adapted for the Country Trade, consisting of Woollen Cloths, Blankets, Flannels, Sheetings, Hosiery, Prints, Cloaks, Bonnets, Factory Cottons, Cotton Warp, &c., with an immense Stock of Hats, Caps, Furs, &c., together with a large and general assortment of

READY-MADE CLOTHING,

suited for the Season, and manufactured on the premises; also, a well-assorted stock of Ladies', Gentlemen's and Children's Boots and Shoes, of every description, and at unusually low prices; the whole of which, with the Clothing, will be made by the best of workmen, under the direction of experienced foremen, and will be sold at unprecedented low prices.

Farmers and Mechanics, call and try the "Mammoth House," opposite the Market.

January, 1849.

1

MESSRS. DENISON & DEWSON, ATTORNEYS, &c.

New Market Buildings, Toronto.

January 26, 1849.

2

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CONTINUES every Branch in the above Establishment, as heretofore; and in addition, keeps constantly on hand a good assortment of COOKING, PARLOR, BOX and AIR-TIGHT STOVES, of the most approved patterns.

Also, a SECOND-HAND ENGINE, with or without the Boiler, 12-horse Power, will be sold very cheap for Cash or short payment.

Toronto, Jan, 26, 1849.

1-tf

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Corner of Bay and Wellington Streets,
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THE next Session of Adelaide Academy will commence on THURSDAY, the 4th of JANUARY, with Lectures on Chemistry and Astronomy.

Pupils are received at any time during the year, except from the 1st of July to the 24th of August.

Competent and experienced Teachers are engaged to give instruction in all the solid branches of an English Education, in Instrumental and Vocal Music, Drawing, Painting in Water Colours, Oil Painting, Miniature Painting, &c.

Lectures will be given to the classes in Natural Philosophy, Chemistry, Astronomy, Physiology, and Biblical History.

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J. HURLBURT, A.M.

Principal.

Toronto, 14th December, 1848.

1

FRAER'S PATENT CHURNS.

THE Subscriber has received an assortment, from John Gamble, of Dundas, the manufacturer, of the above Churns, of which a full supply will be kept constantly on hand; at his old stand on King Street, a few doors East of the Market.

G. MONRO.

Toronto, January, 1849.

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G. MONRO, King Street East, Toronto, still continues to pay the highest price for Fleece and Pulled Wool.

Toronto, January, 1849.

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1

Toronto, January, 1849.

AMERICAN SCYTHES, FORKS AND HOES.—A very large assortment of the above articles for sale, wholesale and retail, by the Subscriber.

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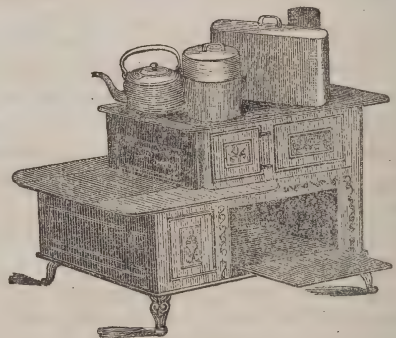
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January, 1849.



STOVES! STOVES!! STOVES!!!

J. R. ARMSTRONG, CITY FOUNDRY,

No. 116 YONGE STREET, TORONTO,

HAS constantly on hand, COOKING, BOX, PARLOR, and COAL STOVES, of various patterns and sizes, very cheap for Cash.

Also, a New Pattern HOT-AIR COOKING STOVE, just received, taking three-feet wood, better adapted for the country than the Burr or any other Stove now in use. It has taken the First Premium at every fair in the United States, where it has been exhibited.

Ploughs, Sugar Kettles, Grist and Saw Mill Castings, Steam Engines, Sleigh Shoes, Dog Irons, and a general assortment of Castings.

Toronto, Jan. 26, 1849.

3

CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash prices for 1000 Bushels clean Timothy Seed; 100 Bushels clean Spring Tares; 100 White Marrowfat Pea; 25 Bushels Flax Seed.

JAMES FLEMING,

Seedsman and Florist, Yonge Street.

Toronto, Jan. 1, 1849.

1

THE
CANADIAN AGRICULTURIST.

VOL. I.

TORONTO, FEBRUARY 1, 1849.

No. 2.

WINTERING LIVE STOCK.

There is no subject requiring the strict attention of the farmer, at this season of the year, so much as the proper management of his stock; and there is none perhaps more commonly neglected. The inconvenience and loss arising from such neglect, cannot be easily ascertained. Many a well-bred animal, from winter exposure and stinted food, has been rendered worthless. Indeed, the general character of our live stock, particularly cattle, including likewise sheep and swine, has suffered materially from the want of proper care and attention, especially during the winter months.

We believe that the climate of Canada is not unfavourable to the rearing of live stock; and it is a well ascertained fact, that most animals here are less liable to disease than in the mother country; a fact that will appear surprising, when it is considered how little attention they receive. Our climate, it is true, is somewhat extreme, the thermometer having a very wide range, but the atmosphere being generally clear and dry, there is, consequently, an absence of those physical conditions—such as dampness and fogs, which appear in other countries so unfavourable to the health and comfort of animals. The notion which generally obtains at home, respecting the extreme severity of our Canadian climate, is very much exaggerated, and, from experience, we find the difference between the climate and agricultural capabilities of Upper Canada and the British Islands much less than we anticipated.

The two great essential conditions, of the proper management of live stock in winter, are *shelter and food*. These belong to that large class of truths, which, however obvious, require to be constantly repeated. A large and substantial barn, with adequate sheds and yards, thoroughly protected against wet and cold, and combining the necessary conveniences for feeding and watering cattle, are absolutely necessary on every well managed farm. In a country where timber is plentiful and cheap, and of a kind easily worked, there are but few farmers that might not in a few years obtain most of these requisites. We have seen farmsteads in

Canada, that would be thought highly creditable in much older countries; but they, it is true, are but few and far between. We went over a farm the other day, consisting of but little more than a hundred acres, having almost as complete a suite of buildings and offices as we ever saw: a capacious barn, with fixed thrashing mill, chaff cutter, turnip slicer, furnace and boiler, with warm sheds, and well littered open yards, convenient piggery, hen house, &c., all inhabited by thriving and happy tenants, in much larger numbers than could be maintained in the same condition under other circumstances. We, therefore, earnestly recommend our readers to pay the utmost attention to the proper sheltering and feeding of their domesticated animals; being convinced that such attention will receive an ample return. Animals thus cared for consume less food, and maintain a healthier condition. It is, however, of importance to observe, that live stock require, even in the severest weather, a free circulation of pure air. Ill ventilated buildings, therefore, may prove as injurious as undue exposure. The management of sheep in particular requires that they should not be crowded together; and the utmost attention should be paid to regular feeding, cleanliness, and ventilation.

It may not be uninteresting to some of our readers, if we state briefly the philosophy of what we have been recommending. It is a well known fact, that the temperature of animal beings is nearly uniform at all seasons and in all climates. According to a recent theory of Liebig, this temperature, or *animal heat*, is kept up in the living body by the process of respiration; the *oxygen* of the air uniting chemically with the *carbon* of the blood, thus causing a sort of combustion or burning, the result of the combination being carbonic acid gas, a kind of dense air often found in wells and mines, and ill-ventilated sleeping rooms. Whenever this kind of air largely preponderates, neither animal life nor combustion can be supported. Now this carbon is furnished to the blood by the food which the animal eats, and, if in a larger quantity than is required to sustain the necessary degree of animal heat, the balance

becomes deposited over the body in the shape of fat.

Here we have an explanation of the fact, that animals well sheltered against cold, consume less food in maintaining a given condition. The animals that are too often to be seen, during the rigours of a Canadian winter, shivering against the sides of a barn, or the corners of a field fence, require all the food they can get to maintain animal heat, and even that in a very insufficient degree, leaving nothing to be converted into milk, flesh or fat. Adequate shelter, with very moderate feeding, would carry stock through the winter in a healthy and comfortable condition, and prevent the sad spectacle of so many living skeletons in the spring; a fact no less inimical to the feelings of humanity, than it is to the real interests of the farmer.

We have been so much pleased with a series of articles on agriculture, now publishing in *The Church*, written evidently by a practical farmer, that we have no hesitation in furnishing our readers with an extract or two in reference to our present subject.

"In feeding straw in the open yard economy is strictly necessary, to the extent of being sure that the supply will hold out till spring; but any further than that it is not required, as the more of it that is converted into manure the better. The ordinary way of feeding, is that of giving it in racks; but there is, perhaps, no better mode than to distribute it about the yard equally in small heaps. Fed in this way, the cattle interfere with each other less in feeding, and the manure formed will be of a more uniform quality. In none of the domestic animals is the domineering propensity so strong as in horned cattle; particular attention is, therefore, required to prevent the strong from injuring the weaker individuals. The master animals will often habitually neglect their own food, for no other purpose than to drive the weaker ones from theirs. These being thus prevented from even taking their food unmolested become dispirited, and scarcely attempt to feed in presence of the others; than which there can be no more unfavourable condition for thriving. And, as they can only venture to take their fodder after the others have done, there is nothing but the coarsest part left for them, when, on the contrary, they should have the best. Much more of the miserable order, in which many of the animals appear in spring, is owing to this cause alone, than is usually suspected by their owners.

"The care of sheep is also an important part of farm management in winter. More complete shelter from the weather than they are usually allowed is necessary to keeping them in good order. They should be kept at night, and in rough weather, under close sheds, open to the south. For food they require the best hay, on which they will thrive very well, though the addition of a few turnips will be of much service to them. It is necessary to the economical use of hay, to give them but a small quantity at a time, and a number of times each day, as they will not eat it after it has remained long before them. Feeding them on grain, is not generally to be recommended, as it causes the wool to

become loose, and is thought by some to render the successful lambing of the ewes uncertain. Pea-straw, however, that has been cut before too ripe, and partially thrashed, makes an excellent fodder, and is much relished by sheep. In this country sheep are not much subject to those diseases which often prove so fatal in some other places. By providing them with proper food and shelter, and avoiding keeping them much in low or wet ground, much need not be apprehended from that source. They frequently suffer, however, very much from ticks. Sheep, especially the spring lambs, will often die in winter from the misery occasioned by these vermin. If found to be troubled in this way, some wash or preparation should be used to destroy the insects. There is, perhaps, nothing better for this purpose than a moderately strong decoction of tobacco poured into the skin, the sheep being laid on its side, and the wool parted in several places, when the operation is performed. Three or four pounds of tobacco will form sufficient liquid for about fifty or sixty sheep. We have often known this remedy applied with complete success."

In drawing this article to a close, we may just observe, that it has been found from experience, in a country so far distant from the sea as Upper Canada, the free use of salt to all domestic animals is indispensable. It not only serves as a healthful condiment, but renders the animals quiet and easily manageable; conditions very necessary to their thriving. We beg to divert the attention of our readers to the plan of a piggery and cooking-house, found on another page. There cannot be a greater mistake, than the common opinion and management of swine, if management it can be called. Swine require vigilant attention to maintain purity of breed; and there is no class of animals that would better repay for the most diligent attention, with regard to feeding, warmth and cleanliness, matters, however, too commonly neglected.

ON THE APPLICATION OF SCIENCE TO AGRICULTURE.

NO. II.

We come now to consider, whether a knowledge of the physical sciences—such for example as chemistry and geology—is *essential* to the successful prosecution of farming pursuits; or in other words, to the advancement of agriculture as a practical art? In relation to this question there exist many mistakes, and expectations have been held forth by scientific men and amateur farmers, which are never likely to be realised. That there is a connection, near and intimate, between science and agriculture, has been stated and proved in our previous article. It now remains to inquire, whether scientific knowledge, in the sense in which the terms are commonly understood, is an absolutely requisite acquisition to the practical farmer for the further improvement of his important art?

There can be no doubt, that the aid of the experimental sciences is necessary to the formation of a correct theory of agriculture. Not a step can be taken in the cultivation of plants or the rearing of animals, the explanation or rationale of which does not involve some important doctrine of chemistry or physiology. Now although such knowledge may be indispensable to the advancement of agriculture as a *science*, yet it by no means follows that an intimate acquaintance either with chemistry or physiology is necessary to the improvement of agriculture as an *art*. In illustration of this, let us appeal to facts. What single improvement in farming, among the many that have been made within the last half century, can be legitimately traced to mere scientific investigation? We cannot call to mind a single case. The improvements in breeding cattle—the introduction of turnip culture and grain crops—more suitable systems of rotation, adapted to different conditions of soil and climate; nay, even the discovery and application of most of the artificial manures, have all originated with, and have been carried out by practical men. And this is true, to a great extent, with all the principal arts of social life. The manufacture of porcelain, staining glass, dyeing, bleaching, calico-printing, &c., every one of which is strictly dependent on chemical laws, and most of which have been astonishingly improved and cheapened by the aid of modern chemistry; yet they all existed, and some of them in a comparatively perfect state, before chemistry settled down into a science. Indeed when we consider the very few years only with which even the name of this interesting and most important science has been associated with agriculture—when we call to mind that it was only about forty years since, that the immortal Davy first read his celebrated lectures before the English Board of Agriculture; and that afterwards the subject was almost allowed to go to sleep, both at home and abroad, until Liebig, some eight or ten years since, revived it from its slumbers, in his admirable Report addressed to the British Scientific Association; when these facts are impartially considered, the wonder is, not that chemistry has done so little for agriculture, but that in so brief a period, and amidst so many discouragements, it should have accomplished any thing of importance at all.

An imperfect analogy is sometimes instituted between agriculture and the arts, which tends to lead sanguine minds to indulge in visionary expectations, and say hard things against what is commonly designated the dulness and stupidity of practical farmers. The application of some of the numerous discoveries of modern chemistry to the arts of life, whereby production has been wonder-

fully cheapened, and not unfrequently the quality equally improved, has been insisted on as proof and illustration of what may be hoped from agriculture when guided by the superior light of science. But there is a great fallacy involved in this reasoning. The processes of the manufacturer and those of the farmer are placed in a very different position with regard to the available aids of science, and consequently what can be predicated of the one, may not and indeed frequently cannot be of the other. For example: the manufacturer carries on his operations within doors; both science and art being in his case sufficiently understood and advanced as to enable him to control all the elements needful to the result. Not so the farmer; his operations are conducted out of doors, and subjected to all the uncontrollable elements of that variable and fickle thing called *weather*. Besides the analogy fails in regard to the nature of the products. The manufacturer is concerned in producing merely *inorganic* substances: he employs science just in that capacity in which she is enabled to afford the surest and greatest aid—that is, the production of new substances by the well-known laws of chemical combination. His is purely a matter of simple calculation. How widely different is the case of the farmer. His products are *organic*—that is, things produced by the wonderful and mysterious power of life—a force which no science can explain, and no human power control. Now it so happens, that organic chemistry, or the chemistry of life, is the most recondite and infinitely less advanced portion of that comprehensive science; a sure and broad foundation for the noble structure that will hereafter be erected, cannot as yet be said to be firmly laid; and after all, the nature and extent of the vital principle will most probably continue beyond the reach of mortal ken; yet this is precisely that department of chemical science which applies to the theory and practice of the farmer's art.

We come then to the conclusion, that a knowledge of chemistry, geology, &c., is not *essential* to the successful improvement of agriculture; but there can be no doubt that such knowledge, possessed by judicious and practical farmers, might form a valuable and important *auxiliary*. It should always be borne in mind, that agriculture is an art *per se*; and that accurate analyses of soil and organic products, involve duties belonging to the chemist rather than the farmer—they belong to the laboratory and not to the field. It is no doubt desirable that practical skill in husbandry should be combined with high scientific attainment, and the result would be unquestionably beneficial. Yet such cases, even in the most advanced countries, must necessarily be very few; the strict attention

to the mechanical and daily routine of business, by the practical farmer, is not compatible with that leisure and those habits of mind, which are essential to the successful prosecution of the physical sciences. Nevertheless, we advocate the propriety of introducing, as far as practicable, agricultural chemistry, geology, animal and vegetable physiology, and indeed whatever has a reference to rural affairs, both into our colleges and common schools. In a country like Canada, too much cannot be done to educate the rising race of our farmers, and thus to elevate the standard of that important art on which alone depends so much of the wealth and prosperity of our country. But let no one imagine, that our youth can be made into efficient farmers, either in a school or college; the instructions there given may be highly advantageous afterwards, if a proper use be made of them: but it must be in the field, behind the plough, amidst the numerous and not unfrequently complicated duties of the farm, the real art of culture must be learned, if it be learned in reality and to good practical purpose. Experimental farms in connexion with educational institutions might no doubt be made highly beneficial; but then they must be conducted by men who are *practically* acquainted with farming pursuits, possessing extensive experience, as well as general scientific attainments. To attempt otherwise the teaching of farming, would only end in disappointment. Practice must be the test of science.

That we are not singular in the opinions above expressed, we will quote two of the highest authorities within the wide range of our modern agricultural literature. Mr. STEPHENS, the very able editor of the *Scottish Journal of Agriculture*, in the most elaborate work on practical husbandry that ever issued from the press (*The Book of the Farm*, vol. 1. page 83), says—"The only other science which bears directly on agriculture, and with which the pupil farmer should make himself acquainted, is *chemistry*; that science which is cognizant of all the changes in the constitution of matter, whether effected by heat, by moisture, or other means. There is no substance existing in nature, but is susceptible of chemical examination. A science so universally applicable, cannot fail to arrest popular attention. Its popular character, however, has raised expectations of its power to assist agriculture, to a much greater degree than the results of its investigations yet warrant. It is very generally believed, not by practical farmers, but chiefly by amateur agriculturalists, who profess great regard for the welfare of agriculture, that the knowledge derived from the analysis of soils, manures, and vegetable products, would develop general principles, which might lead to the establishment of a system of

agriculture, as certain in its effects as the unerring results of science. Agriculture, in that case, would rank among the experimental *sciences*, the application of the principles of which would necessarily result in increased produce. The positive effects of the weather seem to be entirely overlooked by these amateurs. Such sentiments and anticipations are very prevalent in the present day, when every sort of what is termed *scientific* knowledge is sought after with an eagerness as if prompted by the fear of endangered existence. This feverish anxiety for scientific knowledge is very unlike the dispassionate state of mind induced by the patient investigation of true science, and very unfavourable to the right application of the principles of science to any practical art. Most of the leading agricultural societies, instituted for the promotion of practical agriculture, have been of late assailed by the entreaties of enthusiastic amateur agriculturists, to construct their premiums to encourage only that system of agriculture which takes chemistry for its basis."

The professor of agriculture in the university of Edinburgh, Mr. Low, to whose able pen the world is deeply indebted for much valuable instruction on rural subjects, observes in his excellent treatise, entitled "*Elements of Practical Agriculture*,"—a work that embodies the substance of his lectures to his agricultural class,—“A knowledge of the intimate chemical constitution of the soil is highly worthy of being obtained, and the subject would deserve to be pursued by men of science, were there no other aim or result than the resolving of chemical and physiological questions. But too much must not be looked for from such inquiries, as teaching the farmer new methods of practice. The farmer knows, for the most part, better than the chemist, when a soil is good or bad; when it is improvable by ordinary means, and when it is too barren to repay the expenses of culture; and he knows better than the chemist how to keep it clean, dry, and as productive as the means at his command will allow, with a due reference to the return as compared with the expenditure. But this latter knowledge is not derived from the laboratory but the fields, and is a branch of a practical business, in which chemistry can render little aid. Whatever results chemical analyses of the soil may hereafter conduct us to, it must be admitted, that as yet they have been interesting to the scientific inquirer, rather than useful to the farmer. Every garden and well-cultivated field shews that the soil may be brought to its maximum of fertility without dependence on any conclusions yet arrived at by the physiologist and the chemist. Perhaps not more than a dozen of chemical analyses of soils have yet been made in Europe, sufficiently exact to aid the pur-

poses of science, while the great mass of those which are made, and communicated to farmers as something necessary or useful to them, are equally worthless for science and practice." (p. 23.)

It is proper to remark, that since this edition of our author's work, published in 1843, a very large number of exact chemical analyses of soils and their products have been made in Britain, and many other countries of Europe; and among this useful class of pioneers, the name of JOHNSTON, the reader in chemistry in the *University of Durham*, and the consulting chemist of the *Highland Society*, stands eminently and most deservedly distinguished. Never shall we forget the lucid and interesting manner in which that able teacher is apt to expound the most difficult doctrines of organic chemistry, not only to the comprehension of his regular pupils, but to large numbers of farmers promiscuously. There can be now no doubt, that the high talent and deep and exact research which scientific men have brought to bear on agriculture, especially during the last dozen years, have thrown an interesting light on many important, yet little-understood processes; those labours, to say the least, have been eminent by *suggestion*, and for the future they promise abundant fruit. The full realisation of so desirable a harvest, must mainly depend, not upon confounding the very different relations of the chemist and the farmer, but by the harmonious blending of their joint efforts. Science *with* practice cannot fail to advance continually the agricultural art.

We are tempted to give our readers another extract from *Professor Low's Elements* (p. 44), in reference to the practical aid of geology to agriculture, a point on which much hardy conjecture has been hazarded: "We see, therefore, that the mere knowledge of the geological formations of a country, does not afford the data for determining the nature and properties of the soils in the manner required for practice. Speculative writers, indeed, have maintained, that a knowledge of geology is not only eminently useful to the practical farmer, but even necessary to enable him to distinguish soils, and adopt the suitable means of improving them. It is surprising that such statements should be hazarded. The farmer, as all experience shews, can distinguish soils by their agricultural characters much more certainly and readily than the geologist can by their geological; and it does not appear in what manner geology can give that knowledge to a farmer which can enable him to cultivate and improve his land. The farmer, it is manifest, must regard the soil which he has to till, not in its relations with a whole district, but with reference to its own characters and fertility. He may find the soil, not only of a single farm, but of a single field,

varying in every degree; and it will be necessary that he adapt his management to these variations, whatever be the geological position in which they may be placed. It were greatly to be desired, indeed, that the practical farmer could acquire a knowledge of geology, and learn to read a portion of that marvellous history, which is written on every rock and mineral bed around him. Such a knowledge would give a charm to rural pursuits, and connect a liberal and interesting study with the observations of daily life; yet such a knowledge, however excellent, will not enable the farmer to discriminate soils better for the ends of practice, much less enable him to cultivate them with greater skill, which is knowledge he must derive from agriculture, and not from geology."

There is nothing, we conceive, really inconsistent in the remarks just quoted, and what was advanced in a former article. Geology, although it may not enable the farmer directly to discriminate soils on a limited area so as better to meet the wants of practice, yet a knowledge of the earth's stratification, of the composition of rocks, their angle of inclination, &c., will often be found of very great service to the farmer in draining and otherwise improving his lands; and such information is essentially requisite in order to direct with efficiency and economy all mining and many civil engineering operations. What we chiefly wish to impress upon the minds of our readers in this paper is, not to rely too much on any deductions of science, however plausible they may appear, until they are confirmed by their only certain test of experience. This caution is more particularly needed in a country where labour is dear and produce cheap. We have known several amateur and would-be-scientific farmers, at home, but seldom one that could make it pay. There can be no doubt that in Canada an immense scope exists for agricultural improvement. Much might be done, with adequate judgment and means, that would afford a remunerating return. But let no one come to this country with a system already cut and dried, however correct in the abstract may be its science, or however well adapted it may have proved on other soils and under different skies, for here it is ten to one but it would prove a failure. It is true that the principles of agriculture are the same throughout the world, but they require an endless series of modifications in practice to suit the constantly recurring variations of climate and soils, to say nothing of the exchangeable value of produce; and this is a species of knowledge which *experience only can supply*. Let every young farmer then, who is about to try his skill and strength in a new field, adopt in the first place the general practice of the district, and deviate from it only as increasing

knowledge and experience dictate. In all countries this is beginning at the right end. It has the advantage of being a safe road, and in the result will prove the most profitable.

The remaining papers in this series will comprise a popular view of the leading principles of Agricultural Chemistry, adapted to the comprehension and wants of our agricultural readers; and while we hope to interest and improve their minds, we trust that we shall not at least mislead them on any material points of practice.

SMITHFIELD CHRISTMAS CATTLE SHOW.

This annual exhibition of fat cattle came off as usual at the Bazaar in Portman Square, on the 7th and 8th of December. It would appear from the reports which have reached us, that the late Exhibition was upon the whole eminently successful.—Although the mere number of animals does not appear to have been much above that of previous years, yet their quality was in some important respects decidedly superior. The different classes were better filled up. There has evidently been of late years among the exhibitors at the Smithfield Show, a disposition to pay more attention to the useful and symmetrical qualities of the animals, than to excessive, and we may add, unprofitable fattening. The late show has surpassed all previous ones in this important improvement, the object being not the mere production of the bulkiest and fattest animals, but such as possessed the largest weight of wholesome food, with the least amount of waste.—We have seen at former Smithfield exhibitions, animals so excessively fat that several of the points and characteristics of the different breeds were completely hidden. It would appear that the recent improvements have been effected chiefly by the feeder, for most of the prizes have been awarded to that class. The restrictions as to the mode of feeding and the amount of food consumed by each animal have been dispensed with, being found either impracticable or unsatisfactory in their application. In sheep, both long and short woolled, the exhibition was good; and among the successful candidates we notice the old familiar names of Webb, Stonam, Hitchman, Earl of Leicester, and that zealous untiring improver of agriculture, the Duke of Richmond. The pigs were also good—some specimens of the Chinese breed being particularly fine. Three Berkshire pigs are said to distance all competition. They were bred and fattened by Mr. Pusey, M. P. the well known agriculturist. We had almost omitted to say that HIS ROYAL HIGHNESS PRINCE ALBERT, (who,—many of our readers may not be aware,—is an extensive practical farmer,) was as

usual a successful competitor. A keen competition took place for many of the animals, and high prices were obtained. The exhibition of seeds and implements was very extensive, including several novelties. Among the latter is the application of *gutta percha* to agricultural purposes. We will conclude this brief notice in the words of an eyewitness. "The show, particularly in sheep and pigs, surpassed any of its predecessors; and the perfection to which these classes have been brought, reflects the highest credit on the enterprise, skill, and science of the agriculturists of England. It is impossible to overpraise this part of the Exhibition; and as usual, the Prince Consort, the Duke of Richmond, and other zealous agriculturists, who have done so much to give an impetus to the farmers of England, sent numerous and meritorious animals."

AGRICULTURAL SOCIETY OF LOWER CANADA.

We have received the *January* number of the *Journal and Transactions of the Lower Canada Agricultural Society*, which contains several valuable articles, and some interesting information. We agree with the editor in attributing much of our present embarrassments to the slovenly and unskilful way in which our agriculture is too generally conducted. It is true that in Upper Canada we have many exceptions; we know of farms that are well managed, and yield a profitable return; yet it must be acknowledged, that in general, we are lagging behind. The following sentence contains an important truth, which all who feel an interest in their country's welfare should deeply ponder.—"The present depressed state of Canada has no chance whatever of improvement, but by what she may derive from the augmented produce of her own soil."

It would appear from the Report of the last quarterly meeting of the Directors of the Lower Canada Agricultural Society, that notwithstanding some difficulties and drawbacks, it continues to persevere in its useful labors. We are sorry to see that the French translation of the *Journal* has not been remuneratively sustained; yet the Directors have resolved not to relinquish it. There is no better test of the public spirit and intelligence of the farming class in any country, than the degree of support they afford to agricultural papers and Societies. We observe with much pleasure that the Lower Canadian Society has imported a number of short treatises on the science and art of agriculture, "with a view of having them published in a cheap form, and circulated in the country and at the schools, in order to give our youth a taste for farm-

ing, as well as to instruct them." We not only hope the Society will be enabled to carry out this excellent object, but should like to see the Provincial Association of Upper Canada lending its aid, as soon as practicable. Co-operation for promoting a common good is always desirable; for "union is strength." The Society has taken an important step in the appointment of a seedsman; and we copy the following paragraph for the information of our readers, who will at once see that something of the sort ought to be done for Upper Canada, which comprises by far the most important agricultural portion of the United Province:

"Mr. George Shepherd, seedsman to the Lower Canada Agricultural Society, has imported a large quantity of European clover, and lucerne, for the Society, which has been admitted free of duty, and will be disposed of at cost price to members of the Society, and to County Agricultural Societies, who may apply in time. We believe it will be found that European clover will answer better in Canada than any other, as it takes a longer time to become perfectly ripe than clover which is raised from American seed, and therefore foreign clover will be the most profitable to sow with timothy seed.—Clover intended for hay, if allowed to become too ripe before it is cut, is not of much value, and clover grown from European seed will not be ripe before the timothy growing with it is fit to cut. We would recommend every farmer who has his land fit for clover to sow some by all means in spring.—Lucerne requires that the soil should be in excellent condition for it, and it must be subsequently kept perfectly clear of all grass and weeds. Mr. Shepherd has appropriated a part of his store for the purpose of receiving samples of agricultural seeds or other produce, on the plan of a Corn Exchange, where members of the Society will have the privilege of showing samples of produce they may have to dispose of. The samples of grain to consist of one quart each, accompanied with the name of the variety, the weight per bushel, the quality of the soil on which it has been grown, and any other information that may be considered interesting. This will be a very convenient mode of showing samples and of purchasing grain for seed or any other purpose, and such accommodation is much wanted in Montreal. Any one having a good sample of grain to dispose of, by placing it at Mr. Shepherd's, will be almost certain to obtain a customer for it, and any person requiring to buy any particular species or variety of seed, will find it at once, and ascertain the description of soil on which it has been grown, a most essential information."

WINTERING CATTLE.—The way to summer your cattle well is to winter them well; and half the secret of good wintering is to *keep them warm*. Animal heat is generated in proportion to the abundance and excellence of their food. Exposure to the cold air withdraws heat rapidly, and of course makes more food necessary to re-supply it, just as an open door makes it necessary to have more wood in the stove. If your stock run down in the winter and come out lean and feeble, all the summer will not fully bring them up again.

AGRICULTURAL IMPROVEMENT.

We take the following extracts from an interesting article that lately appeared in the *Evangelical Pioneer*, a paper published at London, C. W. It is gratifying to see the Provincial Press devoting some attention to Colonial agriculture, which after all must be the grand source of our wealth and the pillar of our strength. Too frequently do we hear in this country that labor is so high and prices so low as to preclude any material improvement in the important art of farming. We have always been of opinion that agriculture generally, either in ancient or modern times, and in any part of the world, has never afforded exorbitant profits. The farmer's life is one of constant application and labour, involving a considerable amount of mental anxiety, and requiring the exercise of much prudence and economy. But then it is a life of healthful independence, affording with honest industry, if not a fortune, at least the means of an honorable subsistence. We should have preferred the following calculation if it had been the result of actual experience, rather than being as it is put hypothetically. So little indeed are farmers in the habit of keeping a strict account of their expenses and income, which would enable them to ascertain exactly their profit or loss upon the operations of the whole year, and also approximately on each particular article of produce, that we think it right to draw their attention specially to the subject: and we hope it may be the means of eliciting some statements from experienced and practical men. Profit or loss should not be calculated for one or two seasons only, but for a sufficient length of time to afford a *fair average*. What is wanting are calculations founded upon a series of actual results. Computations on paper beforehand are frequently very different from the proceeds of the field as determined by measure and markets:—

"The man who tries improved methods, and keeps no accounts, may be expected to say, "It won't pay," or to run into the other extreme and say,—"It pays handsomely, and I intend to go into it on a large scale," because, in truth, he knows nothing about it, and hits or misses at hazard.

The man who does not try to make any improvement in his farming, is either incredulous or obstinate, and the sooner he gets rid of both the better for him.

He, however, who keeps correct accounts, is the man who is likely to make real improvements,—cautious improvements; because by the habit of submitting every thing to the test of figures, errors in judgment are corrected. There is no withholding their truthfulness; no poetry here; all is plain, straightforward, up and down matter of fact,—the result being careful calculation from known facts, added to the money value of expenses and returns.

For instance, a man reads that so and so has tried a particular course of cropping under a new management,—suppose fall wheat after timothy and clover, which timothy and clover were sown with spring wheat, on land ploughed and manured, or rather, dressed in the preceding fall with lime, at the rate of fifty bushels, or seventeen barrels of unslaked lime to the acre; that the spring wheat, timothy and clover, and lime, were all well harrowed into the ground, on the undisturbed sod in the month of April, (only one ploughing, remember, in the fall, and that a good deep one,) and the ground rolled two or three times; that the spring wheat turned out thirty bushels to the acre; that the clover, dressed with one bushel of plaster when up, gave good fall feed the same year, and was in the fall dressed with fifteen wagon loads of short dung; that the timothy and clover hay the next year yielded 2½ tons the acre, and after giving good pasture to the cows, was on the first of September ploughed down with a nine-inch wide and six inch deep furrow, with a good Scotch plough; that a subsoil plough immediately followed the Scotch plough, and loosened ten or twelve inches, or more, deeper, without bringing up any of the subsoil; that the land was then sown with fall wheat, at the rate of 1½ bushels the acre, on the same day as ploughed, then well harrowed and rolled with a heavy roller; that the wheat was twice fed down by sheep up to the first October; that there was no snow that winter, but frequent rains, hard frosts, and thaws, but that, nevertheless, the wheat was not heated out, although, under the former system of shallow ploughing, it had been so more or less, every year; that in the spring it was harrowed with a light harrow and roller, as soon as the weather was dry enough, and timothy and clover sown again at the same time, and plastered as before, going through the same course of wheat and clover and manuring (but liming only once in six or eight years,) as might be found convenient,—the actual experiment having lasted, we will suppose for three years; that is, having yielded one crop of spring wheat, one of timothy and clover hay, and one of fall wheat, with the few intervening months of pasture; and the third year yielded thirty bushels of fall wheat the acre.

Well, an intelligent and wide-awake farmer having read this, and not being inclined to turn up his nose at it because he happened to see it in print, and imagine it was all stuff because it was in the newspaper, does not say, "I like that and will try it," but sets himself to figure it up, which is not difficult for him, because he has been accustomed to it.—He knows that when he properly employs his men and teams, so as to have idle time only on wet days and Sundays, that a man at \$10 a month and boarded, costs him a little under 3s. c'y a day; his span of horses, with plough or wagon, &c., cost him 2s. 6d. a day; his man and team plough $1\frac{1}{2}$ acre a day, in a good loam, free of stumps; his seed wheat he calculates at an average of 3s. 9d. currency a bushel; clover seed, \$5, and timothy, 5s. currency the bushel; he sows $1\frac{1}{2}$ bushels of wheat, 10 lbs. of clover seed, and 5 lbs. of timothy, the acre: harrows well, four acres a day. Here then he has the materials of his calculation. He is at first staggered a little at the expense of the lime, which he can get at the kiln at 1s. 10 $\frac{1}{2}$ d. currency a barrel, but is not frightened.

CALCULATION BEFORE DETERMINING TO ADOPT THE
COURSE:

Dr.	First Year.	First Year.	Cr.
Ploughing in the previous fall.....	0 3 8	30 bush. of spring wheat, at 3s. 1½d	4 13 9
Cost of 17 bbls. of lime, at 1s. 10½d..	1 11 10½	the bushel	0 5 0
Teaming & spreading the lime.....	0 10 0		
1½ bushels Spring Wheat at 3s. 9d..	0 6 7½		
10lbs. clover seed, 4s. 2d.; and 5lbs. timothy, 5d.....	4 7		
Sowing, harrowing and rolling in ...	0 2 6		
Plaster & sowing	0 5 0		
Harvesting wheat	0 7 6		
Threshing thirty bushels at 4d. ...	0 10 0		
15 loads of dung, hauled out, and spread on the timothy & clover	0 5 0		
<i>Second Year.</i>		<i>Second Year.</i>	
Saving timothy & clover hay	0 5 0	2½ tons of hay, at \$5	3 2 6
Taking 2½ tons of hay to market ...	0 12 6	Fall grazing worth	0 3 9
One ploughing timothy and clover lay	0 3 8		
Subsoiling do.	0 5 0		
1½ bush. seed wheat at 3s. 9d.	0 5 7½		
Sowing	0 7½		
Harrowing & rolling do.	0 2 6		
<i>Third Year.</i>		<i>Third Year.</i>	
Timothy and clover seed to sow on wheat		30 bush. fall wheat at 3s. 9d.	5 12 6
Sowing, harrowing, & rolling in	0 2 6	Fall grazing worth	0 5 0
Harvesting wheat	0 7 6		
Threshing thirty bush. 4d.	0 10 0		
Three years' interest on land, valued at £5, and lime, say £2 10-£7 10.	1 7 0		
	8 17 3		
Deduct from these expenses, half the value of the lime, which will last 6 years at least	1 1 0		
	7 16 3		
Profit in the three years ...	6 6 3		
Or, each year £2 2 1 the acre, a great profit.			
	£14 2 6		£14 2 6

Having made up his mind that his calculation is correct, he sees at once what the whole thing is worth, and adopts or rejects the course on sure grounds, not guess work.

Calculation then is the groundwork of all agricultural improvement; for by first calculating what

an experiment is likely to turn out, and then by keeping strict accounts, and calculating its actual profit and loss, after the experiment has been tried, we arrive at correct results, which cannot be arrived at in any other manner.

Let farmers look into the foregoing calculation and honestly convince themselves of its truth or falsehood, not by jumping at conclusions, but by rigorous examination; and in calculating the labor cost of their men and teams, let them remember that if they have not full employment for them, that is no fault of the men or teams, but their own mismanagement. We consider 275 working days in the year a fair calculation for a team, that is, deducting from 365 days, 52 Sundays and 38 wet or idle days; allowing the feed of each horse to cost the farmer £10 a-year; and for the other items, comprising interest and wear and tear, we allow the horses to cost £20 each; waggon, £15; shoeing, £1 10s. a-year; wear and tear, one-tenth of the cost of horses and waggon, as a charge each year. No charge has been made for taking the wheat to market, as the value of the straw will be fully equal to that.

J. H.

ST. JOHN, N. B., AGRICULTURAL SOCIETY.

The Annual Report of this Society for 1848, is lying before us, as published in the *St. John Courier*, and, as is usual with such documents, it contains much that is interesting and instructive. We feel much pleasure in laying before our readers what our fellow subjects are doing in New Brunswick, an important portion of our dominions in British America, that possesses much higher agricultural capabilities than is commonly imagined.

The Report commences by stating that a large quantity of seed oats, barley, turnips, carrots and beets, had been during the previous spring imported from Scotland, and the results at harvest had been most satisfactory. The soil and climate appear well adapted to oats: some of the Polish and potato varieties, imported four years since, now produce a heavier weight than the original seed. The society had offered handsome premiums for the erection of improved oat-mills, several of which are in the course of erection. The wet weather of the last season had been unfavourable to the crops—though hay had been generally abundant and well saved, Potatoes were early affected with the disease, and a full half rotted in the ground. Oats, generally good. Barley, owing to the wet weather, was light, although samples weighing 54lbs. a bushel were exhibited at the Fair.

We can only make room in our present number for the following earnest appeal, which we assure our subscribers in New Brunswick is, in some important respects, equally applicable to Upper Canada. One great step, we think, towards the advancement of British America, is a full confidence in our great natural resources.

A PROVINCIAL BOARD OF AGRICULTURE.

In our report of 1847, we called the attention of this community, and of other societies throughout the province, to the propriety of urging upon the legislature the adoption of energetic measures, by means of which the agriculture of the province might be raised from its present disgraceful and ruinous position.

The only results of our appeal were, a grant of £500 to import race-horses, and the enactment of a law to prevent the growth of thistles!

The time seems now to have arrived, however, when a continuance of apathy and neglect, on the part of the government and the people, in relation to agriculture as a subject of the most vital importance to the province, will certainly and speedily bring about universal bankruptcy, and the depopulation of the country. As we do not content ourselves with the cuckoo cry of "something should be done," we proceed to state what we conceive *can and ought* to be done.

In the first place, we propose that a Provincial Board of Agriculture should be formed, to be composed of those, who, from their position, energy, business habits, and acquaintance with the state of agriculture in this and other countries, would be most likely to bring forward, and *carry out*, measures of improvement. Sufficient funds should be placed at the disposal of this board to enable it to carry on its operations with vigour and effect.

Next, as to the work to be done. It is not so much the want of industry, as the want of knowledge, which renders farming unsuccessful in this colony. Our native farmers, as might be expected, follow in the footsteps of their fathers; they neither see, nor hear of, any better methods than those of their ancestors. Those emigrants who undertake agricultural pursuits, do as they see others doing; and as few, or none, of these new settlers have been bred to farming, they introduce, if possible, a worse system than the old one—an exclusive reliance on the potato.

The mode of culture adapted to the virgin soil—to the rich leaf-mould newly rescued from the forest—will impoverish and render valueless the cleared fields which now compose so much of our farms. Yet the cultivation by which these worn-out fields could be made to produce far more than ever the *burnt land* did, is unknown and unpractised. There is no rotation of crops—no draining—no proper ploughing—and but imperfect manuring, as hay and most of the other produce are sold off the farm; consequently the land is almost barren. Only uncertain and short crops are produced, and the universal cry is—"No use trying! Farming in this country will not pay." And no wonder—such farming would not pay in any country.

To introduce and encourage a better system of farming, would be the chief business of the board.

There are various ways by which agriculture is encouraged in other countries. The Agricultural Boards of the United Kingdom employ lecturers on agriculture, who visit every part of the country.—The boards also establish model farms, and agricultural schools, in which the best modes of agriculture are carried on, within the view of all; and at the same time means are adopted, by a system of accurate accounts, of furnishing ample knowledge as to the profit and loss of farming upon sound principles.

The boards have frequent shows in different parts of the country, where large premiums are distributed for improvements in stock, or in modes of cultivation. It is notorious, that Great Britain owes her present elevated position in agriculture chiefly to these means. In Holland, Germany and Sweden, agricultural colleges with model farms attached, are considered as necessary as courts of law or churches. The agriculture of a great part of Scotland, was rescued by the Highland Society from much such a state as that of New-Brunswick is now in, but little more than half a century since.

There are peculiarities in our position, however, which must affect the mode of procedure. From the protection heretofore enjoyed by our timber in the British market, and the exclusive encouragement given to that branch of trade by our own legislature, timber-getting, and the branches of business intimately connected with and dependent upon it, have absorbed all the energy, industry and capital of the province. Agriculture, the only source of permanent prosperity to any country, has not only been neglected, but absolutely sacrificed. In this country, capital accumulated in other pursuits, instead of being invested in the improvement of land, as in most other countries, has been taken (with the addition of all that could be scoured from the farms) to supply lumbering parties, and to build saw-mills. Farming, thus neglected, would of course prove unprofitable; and farmers themselves being loudest in crying out that farming would not pay, the character of the province, as an agricultural country, has been sunk to the lowest possible ebb, not only among ourselves, but in those quarters from whence we might expect assistance and encouragement. It is owing to this erroneous opinion of the agricultural capabilities of New-Brunswick, that while foreign capital and skill are pouring into the United States, Canada and Australia, the emigrants to our shores have been generally poor and ignorant. Farmers with capital pass us by—the people of New-Brunswick say it is not a farming country; and the wealthy emigrant takes their word for it, naturally supposing that they ought to know best. That New-Brunswick is not the land for farmers, is therefore set down as an established fact—it is so stated to emigrants at the various ports of embarkation throughout the United Kingdom, and it is urged upon them in many of the publications for their information and guidance.

To remove this false impression, and make known to farmers in other countries who are inclined to emigrate, these FACTS,—that our climate and seasons are quite favourable to the growth of wheat, maize, barley, oats, hemp, and all vegetables—that few countries possess a greater proportion of soil fit for cultivation—that freehold farms ready for the plough, can be obtained for less than the annual rent paid for similar farms in older countries—will be the duty of a Provincial Board of Agriculture; and this, with the task of introducing into the country, by means of model farms and otherwise, a system of farming which *will* pay, and the labour of providing instruction in this new system, to farmers' sons and others, throughout the province, will furnish ample employment to the board for many years to come.

The whole success of the board will of course depend upon the appointments being made of those

who will fit the offices, and not from among those whom the offices will fit.

We trust that the other agricultural societies, and the friends of agriculture throughout the Province, will give serious attention to those suggestions, and co-operate with us in bringing this subject under the notice of the government and the legislature. As our sole motive is an earnest desire to promote the welfare of the country, we shall hope to be excused for thus earnestly pressing our views and opinions upon the people generally, and seeking their co-operation in a matter of such vital importance. The occasion is so pressing, that it behoves every man to be "up and doing." Our *one* article of export is now a drug in every market; and as our farmers do not even produce sufficient food for themselves, we must change our course or the province will be deserted.

ADDRESS TO FARMERS.

To the Farmers of New-Brunswick we would say:—The prosperity of the country depends upon you. It is only by well-directed energy and economy on your part that a surplus of food can be produced; and until we have that surplus, no manufactures can be carried on profitably. Will you allow it to be said, that while farmers in other countries, pressed down by heavy rents and taxes, and without any right of property in their improvements, are causing their fields to yield double, that you—the owners of the soil—with a climate abundantly favourable for almost every crop—with miles on miles of fertile alluvial valleys, and hills that may be cultivated to their very tops—with a government of your own choosing, and lighter taxes than any country in the world—that you are not only not improving, but are actually going backward!

Farmers of New-Brunswick! You stop the way—you must move onward!

Signed by order of the Board,

ROBERT JARDINE, *President.*

M. H. PERLEY, *Corresponding Secretary.*

St. John, October 20, 1848.

To the Editors of the Canadian Agriculturist.

Sirs,—I saw an article in one of your numbers, from a farmer who grew asparagus "as thick as fork handles." The treatment of his asparagus bed is excellent; but he says he cuts the plants over ground. I understood they should be cut an inch under the surface, and have seen this recommended in gardening works—may I request to know which you consider best?

I would also request your opinion on fall ploughing, as I find a difference on this subject amongst good farmers. All appear to think it good for summer fallow. Some approve of it for the spring crop of barley, but condemn it for any other spring crops. They say that the stiff clay soils, which constitute the character of three-fourths of the soil of the province, get beaten down and hardened by the rains, and that they lose their fertilizing power by exposure to the air and evaporation. On the other hand it is urged that deep ploughing is good, and that the ground can be ploughed deeper in the fall than in spring. This I think true, and I have ploughed this fall, on that account, with three horses abreast. I think I would have done better, had I

ploughed with a team of four horses; and better still with two teams of two horses, one plough without a mould-board following the other. It is also said, that the stiff clay is rendered friable by the winter frost, and that grubs and other destructive insects are destroyed by exposure to the frosts. In corroboration of this opinion, a neighbour of mine, a Welsh farmer, tells me that he has a field, on some acres of which the crop was always destroyed by the grub, till he ploughed in the fall, and that where he does, it is not injured. It is also said, that the land so turned up gains more by absorption than it loses by evaporation, and finally that the time for spring sowing is so short, that it would be well to plough as much as possible in the fall, if the exposure did no injury—as it would greatly advance the spring operations. I am but a poor judge myself, either practically or theoretically, and would therefore be obliged by your opinion on this subject; and hope that some of your intelligent practical agricultural subscribers may consider the subject well in all its bearings, and favour your readers with their opinions.

C. J. B.

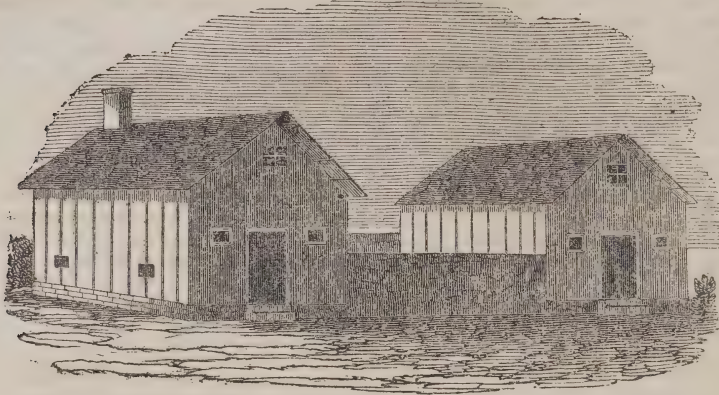
Toronto Gore, Dec. 15, 1848.

[We hope some of our agricultural readers will give our correspondent the benefit of their experience in reference to the subjects embraced by his inquiry. It is only by comparing a large number of well-ascertained facts, as they have been found to exist under diversified circumstances of climate and soil, that general principles can be safely drawn on practical agriculture. We shall be happy at all times to register the observations and experience of our correspondents in all portions of this province; and it is in this way principally that an agricultural periodical can be beneficially sustained. Without going at large into the subject at present, we may just observe, that considering the frequent lateness of the spring in this country, and the short period for sowing, it is desirable that autumn ploughing should not be neglected. Some soils will of course afterwards consolidate, but even such, we should imagine, must have received some benefit from the previous ploughing. We think there is no reason whatever to fear that the soil can sustain any injury from exposure to the action of frost, rain and air, but on the contrary, must be materially benefitted. Such exposure induces several important changes, both chemical and mechanical. Our correspondent, we think, will experience the benefit of his deep fall ploughing in his spring crops. Ploughed land should be left in as rough a state as possible through the winter, and well water-furrowed. If it be too much consolidated in spring to obtain a sufficiently fine and deep tilth by common harrowing, the only alternative is another ploughing, or what would answer equally well, the employment of an efficient cultivator. Again we say to our readers, send us an account of your various practices, and the results of your individual experience. We hope some of

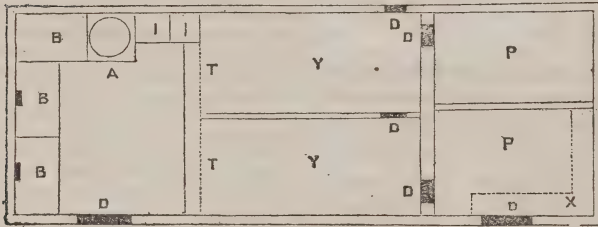
our horticultural friends will attend to our correspondent's inquiry respecting the management of asparagus.]

FARMING A TRADE.—Farming, to carry it on successfully and with profit, is as much a *trade* as many other kinds of business. It is as necessary that a regular apprenticeship should be served on a farm, in order to make a neat and profitable farmer, as it is to spend two or three years in learning other trades which might be mentioned. The difference is easily discernable between the farm of a workman, one who has served his time on a farm, and one who has had little or no experience in his business. While the former keeps every thing in good order about his premises, and raises good crops, the latter lets things go at “loose ends,” and has stinted crops for his pains. One will endeavour to raise crops with little or no manure, and with land half cultivated, and in return for his labors receives scarce enough to pay for his trouble; hence the complaint of small profits of farming. While another who has devoted his time and attention thereto, “served his time on a farm,” deems it to his advantage to manure bountifully, and cultivate accordingly. He calculates not only on his profits the present year, but for his land to pay in the same ratio, succeeding years. The one who considers farming no trade, but thinks each and every one capable of successfully managing a farm in all its varied parts, often has cause to change his opinions. It is most true any and every one can do it with the same profitable results. It is true again that the individual who has plenty of capital with which to improve land, has altogether the advantage over the individual whose means are limited. But it is not true again, that the one having the largest amount of capital always receives the most actual profit. While one may have a capital of three thousand dollars at his command to take the advantage of in his farming operations, another may have but five hundred, and still receive a higher per cent in proportion to the amount invested. The cause of this, in a great measure, is owing to the better management of the latter. Now it is very evident that the man who has “served an apprenticeship,” been brought up on a farm, and devoted himself to his calling, will through his skilful husbandry receive nearly double the profit from the same amount and quality of land, that the individual will, who goes on to a farm with scarcely any knowledge of his business. True, he can plough his ground and plant his seed, after a fashion; but will it be done in a workmanlike manner? As well might a farmer go into a blacksmith's shop and attempt to forge out a shoe for a horse. No doubt, he would make something that would resemble a horse-shoe, but would it be a suitable shoe for a horse to wear? Just so with the unpractised, who would be a farmer; he might *manage* a farm and get a living from it; but how would the looks of his farm compare with his who was a farmer by trade? Farmers often experience the difference in those whom they hire to labor on their land. While one can earn eighteen dollars per month, another equally as strong and healthy cannot earn more than ten. The reason of this is plain. The one who has eighteen dollars is a farmer by trade; he knows how and where to take hold, and how to proceed; while the other, who has but ten dollars, (and perhaps is a dear hand at that,) is so little acquainted with the business, that he can scarce begin a job without being told how and where by his employer, and then he will go to work in a very bungling sort of a way. The fact is, he is a “raw hand”—he has got the trade to learn before he is worth eighteen dollars a month. The saying is, “Every one to his trade,” and there is more truth than poetry in the remark.—*Boston Cultivator*.

PLAN OF A PIGGERY.



GROUND PLAN.



We take the above cut, and the description which follows, from the "*Transactions of the N. Y. State Agricultural Society.*" It received the premium at the January meeting of the society last year. We like several features in the plan, but think it capable of some improvement. In most cases a Canadian piggery would require to be larger than this, if, as the author states, it will only accommodate six hogs. In putting up buildings of this kind, it is better to make them too large than too small.

I forward you my plan of a piggery and other necessary fixtures, which I have in contemplation, and am preparing to put up, on a tasteful and cheap scale, within the reach of every thriving citizen in our state.

The cost of construction will depend much on the finish. The ground plan of the two buildings, which includes a yard between them, is 40 ft. long and 14 feet wide, which may cost from fifty to ninety dollars. A good mechanic has promised to do all the labour, after the foundation was laid, for fifty dollars, the boards to be planed and matched. Unless the buildings are to be painted, I would recommend that the boards be put on in a rough state, and white washed with a composition of stone lime and water lime. To construct a good cellar would cost about thirty dollars more.

This plan might be enlarged; I have designed it for six fattening hogs, or for one breeding sow and three porkers. "Millionaires" may require something more expensive, but this is sufficiently spacious for the common citizens of Vermont. The two upright buildings represent the swill house

and piggery. Both are fourteen feet long and twelve feet wide, the posts ten feet.

The ground plan of the first building contains the arch A., for cooking, where boilers and steamers will be placed sufficiently large to accommodate the number of hogs to be fed. The feeding troughs also, T, T, are included in the same building, which is made of white oak plank, and extends the whole length of the house, except the space occupied by the tubs or vats, I, I, which are convenient for the cooked food, swill, &c. One of them may contain the warm food, and the other in process of fermentation, to be fed at any time. The dots on the yard side of the house and feeding trough, T, T, represent standards of iron or white oak, arranged along the front close to the outside of the trough, at suitable distances to allow the heads of the swine to pass between them into the feeding trough. The sill on this side of the house is raised and framed to the posts two feet above the common level of the other sills, and these standards or pins which prevent hogs from getting into the trough or house, are framed into the sill above, and the feeding trough; the plank which forms the bottom of the trough may project on the outer side for that purpose, or the plank may be of such thickness as to enter the upper edge.

B, B, B, are bins for apples and roots, in each of which a window opens for the purpose of shoveling them in, two of which are seen in the upright part. The hogs are to lodge in the pen, and can pass from their apartments, P, P, through the yards, Y, Y, to the feeding trough, T, T; a partition divides the sty or open yard, and extends across the piggery, forming two sleeping apartments, P, P, and two yards Y, Y; six doors and passage ways opposite,

D, D, D, D, D, D. The main door in the piggery opens into the passage, X, 2½ feet wide, for the convenience of the attendant to carry in straw, &c. The open yards may be used for litter, and to manufacture manure; these occupy space enclosed between the two upright buildings, and are 16 feet long.

The floor of each building and the yard should be flagged with stone or brick, secured from frost. The sills of the two main buildings are raised upon a wall 18 inches. A cellar may be constructed under the first building for the storage of roots; if seven feet deep, will hold 600 bushels, allowing 2420 cubic inches to the bushel. A convenient wheel and windlass is arranged in the loft of this house, for handling the hogs at the time of killing, and may be convenient for dressing other animals.

There are many piggeries in this state constructed about 30 feet long and 20 feet wide, which contain all the cooking apparatus, the hogs, grain in the loft, and sometimes a wool room, which form a complete nuisance. I am opposed to feeding swine in close buildings where they make their litter, and cooking food under the same roof. The effluvia cannot be very pleasant for man or beast.

Truly yours,
S. W. JEWETT.

FARMERS' CLUBS.

DARLINGTON, ENGLAND, SEPTEMBER.—*Wheat Sowing, and the management of Short Horned Cattle.*—Mr. Dixon said:

The immense quantity of seed generally sown in this district in proportion to the produce, as was observed by the chairman, was certainly a subject which required serious consideration not only amongst cultivators, but the country in general. It was a subject which the cultivators must make experiments upon. A farmer might take a single rood of land and set it apart for that purpose, and sow part of it broadcast, another part drilled at convenient widths for the sake of experiment, and another part dibbled, and thus observe what plan answered best provided the land was fairly cultivated. It would be necessary in case of dibbling to have the land in such a state that the dibble would work; drilling much the same, the land must be in such a state that the drill would work to advantage, in order to sow the seed at a proper depth and regularly. Thin seeding was advocated by a number of intelligent and clever gentlemen. Mr. Hewitt Davis had farmed considerably for a number of years, and from the report of a gentleman who had visited Mr. Davis's farms within the last six months, although the land was naturally very far indeed from productive, and rather of a barren description, yet the beautiful and abundant crops growing thereon showed what could be accomplished by energy and perseverance in the way of cultivation and cropping. He pursued the thin seeding system and got excellent crops, and had advocated the system perhaps more than any other man. The reason appeared pretty obvious. Mr. Davis was a land agent. He was agent for an extensive landowner; and his farm was looked to as a model farm, and others were encouraged to imitate it. If the system had nothing in it that was good they might be sure that neither his employer nor the community would encourage him; he would, in fact, have been put down long ago. There was no question, from the simple circumstance of this single individual, but what the system was worthy of countenance, and if so, it was worthy of being experimented upon.—The Chairman said it was calculated that a million quarters of food would be saved annually by thin sowing without injury to the farmers at all; and if this were correct, he thought it was worthy their consideration

at the present time, when we did not grow as much grain as we consumed.—Mr. Brown thought the season had a good deal to do with the relative advantage of thick and thin sowing. Three years ago he reaped one field which yielded 30 stooks, and another 50 stooks an acre, which had been sown at the rate of five pecks an acre; and this year on the same grounds he had not reaped 25 stooks an acre, though the land had double the advantage it had had the previous year, when he reaped 30 and 50 stooks.—Mr. Thornton then introduced the second subject of discussion. He said, for more than 20 years I have taken great delight in the breeding and management of short-horns, and as every man has a right to praise the bridge he has got safe over, I may also say that I have every reason to be satisfied, for my cattle have always left me a good profit. I have always been careful in selecting bulls bred from cows that make a good show for milking, having a good shaped udder, with the paps hanging well; as I have always found in the sale of cows and heifers that this is a great advantage. I have at present a cow which my hind has had for the last three years; the same hind also had her dam for two years before. He says that he never milked two better cows anywhere, the last one, more particularly, milked uncommonly well for the first year, but the second year not quite so well, on account of her having twins, two bull calves, which I sold for 75*l*. This year she produced a heifer calf, and is now in calf again, and is also milking well, as the hind informs me; and this is more, I believe, than many of the short-horn breeders can say, for their cows are not always milkers. I have now had this breed for more than 20 years. Now, as to the management of my short-horned cattle generally, some of my calves I put to nurses, but not to cows having too much milk. I have seven calves sucking at this time. In November I take them from the nurses and put them into a fold yard (not too close), and give them turnips, hay, and straw. They come out in the spring with plenty of hair and robust constitutions, and do better when turned out to grass in the spring, than if they had been kept close in a warm house in the winter, and indulged with meal and oil cake.—Mr. Emmerson said, with all deference to Mr. Thornton, I am quite satisfied that I could not bring out a real good animal, either bull or heifer, at a year old, if I were to confine them to the keep which Mr. Thornton tells you answers. Turnips and straw are only poor feed, and I only consider turnips as lentils, and greens require something along with them to qualify them; it would be much the same to set us farmers down to greens without any beef; we might live upon vegetables certainly, but we should only thrive badly without the beef. I have had some experience in the management of short-horns, although not so much as Mr. Thornton, yet in order to produce first-rate animals, I find it requisite for them to suck the nurse from three to five months; I then give them oil-cake and meal, or anything that they can eat. In giving them bean-meal, I however give it in very small quantities at first, and gradually increase it; otherwise it is too binding and would injure them. I of course give turnips and hay along with other things, but I am quite sure that in order to bring out a first-rate bull at a year old, he must have oil-cake and corn, as well as turnips, hay, and straw.—Mr. Thornton in reply said, that in describing his general management of short-horns, he did not mean to say that higher keeping was not sometimes resorted to in the case of prize animals.—Mr. Goldsborough said, that generally speaking, his year olds, with good keeping, were as big as most of his neighbours' two year olds. He kept his for about two months on new milk. After that he gave them meal and beans, and hay and pottage. He gave them no green food, except occasionally a few tares or anything of that sort. He kept them in the fold both

winter and summer; he considered he lost nothing by keeping them well; he had not lost one since he commenced keeping them well; when he kept them badly it was quite the reverse. He thought the best method of breeding a great matter. Many of the farmers were debarred from putting their cows to good bulls for breeding purposes, in consequence of the high prices charged for them; two guineas always, but if a calf were kept for a bull, then five or ten guineas being generally charged. If gentlemen in the neighbourhood would buy a good bull for the use of their tenants, it would not be easy to calculate the amount of good which would be done.

FARMERS' CLUBS.

NEWCASTLE, ENGLAND, OCTOBER.—*On the Breeding, Rearing and Working of Farm Horses.*—Mr. Ramsay introduced this subject as follows:

The subject I am about to bring before the Club is one of vast importance, as it involves a great outlay in farming affairs, the useful cart horse being at all seasons and at all times in requisition, particularly in these times, when such great exertions are being made to place the various kinds of seed in the ground in good season as well as in securing the crops when at maturity. Indeed, the horse is so necessary a portion of farming stock, on the good or bad quality of which so much depends, that I hope I need not apologise for endeavouring to show how necessary it is for every farmer to possess a good breed of useful animals of this description. I shall therefore attempt to lay down a few useful hints for the breeding, rearing, and working, of farm horses. First as to the breeding of useful cart horses. The first principle and best rule is to select proper animals to breed from. It is said, "like generally produces like;" and if that is not always accomplished, it will in most cases prove true. It is therefore necessary to begin breeding with well formed animals; and although every one almost thinks himself a good judge of horses, yet it does not follow that he is so. I will therefore venture to lay down a few rules to go by, which I trust may be of use, particularly to the inexperienced breeder. The different breeds of work-horses may be said to be comprised under the heads of Clydesdale, Cleveland and Suffolk, and the large black horse of Lincolnshire and the midland counties. The first is useful and hardy, and may truly be said to be a good sort of horse for farming purposes; but they are heavy-headed, and sluggish in their movements, deficient in their loins and back ribs, and too long in the back: the feet and legs are generally strong and sinewy, and they are good feeders. The Cleveland horse has long been noted for being a good traveller, and an excellent plough horse, and crosses from this breed often produce excellent carriage horses. The Suffolk horse is little known in this district. He bears a good character for hardness of constitution, sound palling, and great activity. He has borne away many prizes at the Royal Agricultural and other shows, and I believe might be crossed with advantage with our Northumberland and Durham breeds. The Lincolnshire and midland counties horse is often of great weight and strength, and suitable for London drays and those occupations where great loads and slow draughts are required; yet many of these want action for farming purposes. The horses bred in Northumberland and Durham are of an excellent breed, and if proper pains were taken in breeding them they are equal to any kind of work, and I believe they may fairly be allowed to stand high as active and useful cart horses. To improve our native breed, I will therefore endeavour to point out the most desirable animal to breed from, and mention a few points necessary for that purpose, as far as that can be accomplished. Mares for the purpose of breeding should be well shaped in their different parts; gentle, but spirited; have a large well formed carcase; good middle, strong

sinewy limbs, not too high (say 15½ hands high), broad well-formed chest, which is of the greatest importance; neck not too long, but well set on; a large clear eye; head not too large, and well set on; ears erect; free from natural blemishes of any kind; one colour is to be preferred, with good action in all her paces; head well elevated, which generally indicates spirit; and not too much hair on the legs. The proper age for breeding is neither too young nor too old, which will impart vigour to her offspring. The horse should be of good colour, bold and spirited, well made, and of kindly disposition, constitution strong and healthy, and as much as possible of the same description of animal as the mare. I believe most of the mongrels we see result from crossing with an expectation of improvement, without either sire or dam having the requisite qualifications for breeding; hence so many failures. One thing should not be forgotten, viz. to have both parents of a sound, good, pulling race; there is no doubt of this qualification being hereditary in different breeds. A stallion should have good action. Action is strength in many cases; and when horses have to go through excessive labour in busy times of the year, they fail in performance if they have not great activity. The breeding of good cart horses will pay the farmer best; they go early to work, are generally healthy, need less pampering than the blood horses; and as they begin to work for their meat when young, may be said to cost a farmer little or nothing at the age of 6 or 7 years, when they may be sold if thought advisable, and replaced in the farmer's stock by a younger generation, and the money placed in the farmer's pocket for a useful purpose. The proper season for having foals dropped is so well understood that I need not name it in this paper; but there is nothing like having an early foal. Next as to the rearing of cart horses. As soon as the foal is weaned, which is in the autumn, it ought to be well fed with grass of a nutritious kind, have corn given it daily, and handled as often as convenient to make docile and tractable. In winter it ought to have hay and corn; and if the hay is cut and steamed so much the better. Bran mashes are also excellent for young horses, and should occasionally be given. If treated in this way they will easily be trained to work. Kind treatment should always be made use of; harsh measures should always be avoided. When the horse attains the age of two years, he may be worked gently in seed time, and turned off again till a year older. After that he may go on with regular farm work, such as ploughing, harrowing, &c.; but I would advise good feeding, and not too hard work, at this tender age; as, be assured, the better he is treated when young, the longer he will wear. Many diseases are brought on by ill usage when young, and before the limbs and body are perfectly matured. I now come to the working of cart horses, and to show how I think they ought to be treated, in order that the food they eat may tend to economy, at the same time that they are kept in high condition, and fit for great exertions in busy times. I will therefore need to trespass a little longer on your time. First, as to food. I will commence with the winter season. Supposing a farmer to have obtained by breeding or buying, a useful set of farm horses, and his judgment leads him to keep no greater number than is really required, it will at once strike the mind of every practical farmer of what consequence it is to the success of his business, that he should feed his horses on proper food, to have them in health, and at all times in proper condition for work; for it is certain a farm horse cannot go through excessive hard labour, unless he is kept up to the mark in condition. No person ever expects great performance from the racer, the hunter, the hack or poster, unless he is in first-rate condition; and although the exertions of the work horse are not called out to such extremes, yet his labour is

long and continuous, and he ought to be well supported. Having provided good hay (not the miserable stuff often called hay—no better than, if so good as, straw, owing to want of care in making it, and keeping the worst for home use), the winter should commence as the weather turns bad; at which time the horse should not be left out in the fields, to stand under the hedges or eat grass, which engenders disease and fills him full of grease. The hay should be given in moderate quantities at a time, and the corn should be dry, as nothing is more injurious than soft oats. No farmer need have wet corn, as a very small kiln, which would not cost 20s., would dry all the corn needed. Hay and oats, and occasionally straw, is the food generally used; but I would recommend the oats to be bruised, and mixed with cut hay, and with a slight mixture (if much clover is in the hay) of clean wheat straw either dried or steamed, or boiled; if the latter, a mash should be given in the evening. I am certain from experience, the cooking of food will be made more generally the practice than at present. An addition of linseed-meal is of great use. Turnips and potatoes may also be cooked, and given to horses that plough, &c.; but they are rather of too laxative a nature to sustain a horse that has to work very hard. This may be said to be high feeding; and I expect at least the supply is a generous one. I hold it impossible to get great performances without proper support; and I will condemn the false economy of half starving farm horses, in the winter, and having their condition to make up by excessive quantities of corn in the spring, when they are so much wanted. Like other horses, I have never found that farm horses can be kept in good condition for work without always being well fed. It may be said, Where will so much hay be got? I think it can be grown; but if scarce, a little more straw can be mixed with it, in the depth of winter, when in many situations horses cannot be constantly employed. In such cases the steaming of their food would effect a saving; and a mixture of more turnips, chaff, &c., may be used. Some say this plan is troublesome. If the number of horses employed be sufficiently large to employ a man or a boy to prepare the food, the system will amply repay the expense; and in other cases, if the small farmer would take the word troublesome out of his vocabulary, and employ some of his family in the work, he would find his horses fit for work or sale, and his boys or girls instructed in a necessary part of farming knowledge, and he would have more corn for market to prepare him for his rent day. Other objections sometimes arise, such as the expense of corn mills, straw cutters, &c.; but at the price these articles are now furnished it will be a small farm indeed if the outlay is not paid back the first year. Before concluding this part of my paper, let me not forget to urge regularity of feeding, horses well cleaned, stables properly cleaned and ventilated, and every care being taken of the animals. Most farmers perfectly understand these things—practising them is the only thing wanted. Having laid down a few rules for winter feeding, we next come to the spring months; the busiest time of all the year, and when the greatest exertions are required from both horse and man. At this time the work seems almost endless; yet with willing minds in the men, and horses which have been well used in the winter, all will be accomplished in due time, and with as few work horses as circumstances will admit. When the team is in good working order, fewer will do. Too many poor horses have ruined many a farmer before he could see the evil; and I need not tell the members of this Club that most horses can eat well whether they can work well or not, hence the necessity of being prepared for the busy months of the year. I strongly recommend the bruising of corn. My own practice is to bruise it or mix the corn with cut hay, which compels the horse to mas-

ticate his food and not swallow it whole. Lately some laxity had taken place in my establishment, and I saw the oats growing amongst the dung of the horse after passing through it. Next as to spring, summer, or autumn feeding. Until the turnip season is over, the horse ought to be well fed with such food as I have pointed out before; and about this time winter tares, clover, and grass may be ready to cut for soiling, which is by far the most economical plan of feeding, besides the great addition made to the dunghill. Here again care is necessary in the feeder. The green food should be given in proper quantities, and not thrown amongst the horses in a promiscuous manner, whether the food be wet or dry. I have seen great waste and want of judgment in soiling—and the animal perhaps eating unwholesome food by its being given in too large quantities at once, and perhaps, after being heated before it is given to the horses. Do all practise what they know? I fear not. The quantity of corn may now be greatly reduced, as the work will not be so severe. You may ask me to point out the quantities of food I recommend. This I think better to leave to the judgment of parties interested. There is no fear of your horses getting too fat, if an acre or an acre and a quarter is ploughed in a day and other work in proportion. The soiling system may be carried on through the whole summer and autumn, if found convenient, but I do not think that it is absolutely necessary; as, after harvest, most farms produce aftermath and rough stubbles, which afford a cheap bite, and will lessen the cost of feeding, which is an object; and some contend it does a horse good to be turned out at this time of the year. I follow that practice generally. I know full well that all the plans I have laid down cannot in every case be carried out; many circumstances will undoubtedly intervene to prevent their fulfilment; but what we have to aim at is perfection if possible, or as near to it as practicable—an approximation to the right course will be gaining much.—Mr. JOSEPH LAYCOCK said: Young stock is often kept sadly too bare. It seemed to be forgotten that their food had to furnish them with bone and muscle as well as flesh, and they had only the run of a poor pasture which afforded them little sustenance. Then again, an error was committed in giving horses an unlimited quantity of food. Instead of filling the rack with hay, the man should bring in his arms as much as would suffice for a meal. By cramming the rack out of a loft above, the hay was affected by the breath of the horses and became distasteful to them and was wasted. When farmers were advised to keep their horses in high condition, they asked where the hay was to be found. But if they would weigh out their hay instead of supplying an unlimited quantity, they would find that 10lbs. or 12lbs. a day would be enough for a horse with about 2 bushels of corn in the week. If more were given it would be wasted. The farmer should also insist on the stable being kept perfectly clean. It should not be, as it too often was, in so foul a condition that the ammonia almost took away your eyesight when you went in; it should be kept like a barrack stable. The horses would then be in a better condition for their work. As to ventilation, it was a common mistake to provide an aperture for the egress of the vitiated air, but to make no provision for the ingress of fresh air to supply its place. He threw out these hints for the consideration of the members, and would again particularly impress upon them the importance of weighing out their hay.—Mr. MATTHEWS said: Mr. LAYCOCK spoke of 10lbs. a-day; the cavalry horse had 14, and he was told, picked up his clean straw into the bargain, and if that was not too much for an idle horse, surely a working horse should not have less.—The CHAIRMAN could only say that he had found 10 lbs. a day to be more than a riding horse could eat.—*Agricultural Gazette*.

KEEP YOUR STABLES CLEAN.—As our stock all stand on plank floors, early in the morning we first take up that part of the litter which is not much soiled, with a fork, and place it in the back part of the stalls, to dry during the day. We then clean out the manure, and put it on the dung heap. If the litter be plenty, and it is an object to make as much manure as possible, then we should let all the litter go with the manure, and add plenty of fresh every night for the stock to lie on. And while on this subject, we wish to observe, that if the litter be straw or coarse hay, it ought to pass thro' a straw cutter before using it. This makes it much easier to fork the manure in the heap, as it is not then bound together with long straws. After removing the manure, we give the stables a slight sprinkling of plaster of Paris, or charcoal dust. Either of these substances absorbs all unpleasant effluvia, sweetens the atmosphere, and in the course of the season, adds considerably to the value of the manure heap.

Many farmers let their stock stand on the ground. If the soil be dry, there is no objection to this. If not cleaned out till spring, the manure should be spread evenly over the surface of the stable, every morning, a dusting of plaster or charcoal dust then put upon it, and fresh litter added before night. Each animal will thus make a large quantity of valuable manure during the season. One great advantage follows this system, and that is, the salts are not exposed to be washed out of the manure by rain, nor volatilized by the sun, as when exposed to the open air in the barnyard and other places.—*American Agriculturist.*

KEEP YOUR STABLES WARM.—In a brief article, p. 20, of this number, we speak of the necessity of proper ventilation of stables. This can be easily done, and yet keep them sufficiently warm for the stock. Due warmth is essential to the growth and fattening of all animals, and the production of wool in sheep. No farmer can expect much of either during the winter months, if he let his stock be out and exposed to the weather, or if his stables are not properly boarded up, the windows set in, and the doors hung. Next to plenty of good food, water, and air, is good shelter.—*Id.*

EXTRACTS FROM THE FARMERS' CREED.—We believe in small farms and thorough cultivation.

We believe in large crops which leave the land better than they found it.

We believe in going to the bottom of things, and therefore in deep plowing.

We believe that the best fertility of the soil is the spirit of industry, enterprise, and intelligence; without this, lime, marl, plaster, bones, and green manures will be of little use.

REARING CALVES.—I have found the following method to rear calves surest and cheapest: Let the calf run with the cow for a week, then shut it up, giving it about 10 minutes' sucking night and morning, having ready small par-boiled carrots scraped backwards; let the dairymaid introduce the carrot into the calf's mouth, it will soon suck it; continue this easy process for a few days, then cut in small pieces the boiled carrots and put them in a trough, the calf will soon eat them greedily; as soon as it does so, no longer boil the carrots. Now give it as many carrots as it will eat, and put into a little rack some good hay, with young rye and tares. Thus attentively managed, the calf will chew its cud in a fortnight; gradually reduce the time of its sucking, and finally wean it at the end of a month; then tether, on fine days, in good grass, still giving it the carrots at night; let it go into a warm, comfortable pen. The cow from the beginning is either fattening another calf or filling the pail for the dairy.

In the following winter let it have plenty of good hay and roots, with chopped straw and linseed, a quarter of a pint to a quart of water, put into a jar or saucepan and placed on the hearth on hot ashes; in the morning it will be done but not burnt. I have succeeded well with this simple method, and at 18 months the heifers have generally had their calves by their side. Should they scour during the year, I give in balls one table spoonful of Epsom salts, two of flour, and two of whitening or chalk.—*Agricultural Gazette.*

AGRICULTURAL CAPABILITIES OF NEW ZEALAND.—The following extracts from the "Guide to New Zealand," convey useful information of a kind which our readers will appreciate.

"Three years and a half ago, the cost of clearing and cultivating timber land ranged from 40*l.* to 60*l.* per acre, while that of clearing and cultivating the Fern land was from 18*l.* to 20*l.* per acre. The expense in each case when I left Taranaki, in February last (1845) was very much decreased, being as follows:

Expense of felling, burning, and moving logs from 1 acre of timber land	£	s.	d.
Expense of breaking up by hand do	2	12	0
Expense of putting in crop, and expense of seed	1	10	0
Total	£14	2	0

Expenses of cutting and burning Fern, and removing tutu stumps from 1 acre of Fern land	0	12	0
Expense of ploughing first time, do	1	0	0
Expense of ploughing second time, harrowing, ploughing in seed, and harrowing again	1	0	0
Expense of two bushels of seed, at 5 <i>s.</i> each	0	10	0
Total	£3	2	0

"Now timber land yields from 50 to 80 bushels per acre, while Fern land yields from 30 to 50, but when you consider that, for the sum required to cultivate one acre of timber, you can cultivate four acres and a half of Fern land, and instead of 80 bushels, taking the maximum in each case, you reap 225 bushels, the advantage in the latter case is so great and apparent, that the question as to which is the more profitable investment of labour and capital cannot admit of a moment's doubt.

"I am not prepared to give an opinion respecting the wearing of timber land. I have heard some farmers say that it would require manure sooner than Fern land; this I leave for experience to decide. The facts I have here stated are mentioned for the purpose of removing from the minds of intending colonists those frightful ideas of enormous outlay formerly required for the cultivation of a single acre of land in New Zealand which can now be cleared for less money than I have known paid here for rent alone of the same quantity of land."

"On the shores of Cook's Straits, and at Poverty and Hawk's Bay, so rapid is the growth of the coasting trade, in its several branches, that the supply next year will, in all probability, be more than sufficient for the support of the European population of these settlements; as an instance, from one station on the East Coast, and that in one article alone—salted pork, a quantity, amounting in value to 3000*l.*, is annually brought into Wellington, in exchange for British manufactures; and it is estimated, on correct data, that the general coasting trade with the southern settlements will next year show a return of at least 100,000*l.* The great importance of this branch of the commerce of these islands demands every support, and will be found one of the most effectual means of habituating the natives to the manners and customs of Europeans. Again, in agriculture, we have only to refer to the statement exhibiting the quantity of land cleared by the natives in this district, and its neighborhood, and we shall learn that there are 7000 acres of land available for cropping.

Horticulture.



DWARF APPLE TREE ON PARADISE STOCK.

We copy the above Cut and the following remarks on the subject which it is intended to illustrate, from the *Genesee Farmer*, the horticultural department of which is conducted by Mr. P. Barry an extensive Nurseryman, near Rochester, N. Y.—The dwarf apple is a novel and pleasing object to many persons, and where space is a consideration, may be cultivated with profit, as well as pleasure. The remarks of Mr. Barry are quite as applicable to Canada, as to his own country.

A standard apple tree requires at least 25 or 30 feet of ground. It is therefore obvious, that in a small garden of say 100 feet square, or even in a garden of half an acre, such an object must be entirely inadmissible, either on the score of profit or of beauty. Hence, if no other form were adopted for the apple than the standard, the thousands of proprietors of small gardens in the neighbourhood of all our cities and villages, and throughout the entire country, would be compelled to exclude the apple from their list of garden fruits. This would be a great sacrifice, for although apples may be purchased in most parts of the country at low rates, yet there are choice kinds that cannot easily be obtained, and there are no fruits so precious as those of our own gardens, produced by the labour of our own hands.

The Dwarf Apple, produced by grafting or inoculating on the *Paradise stock*, is therefore a great desideratum for small gardens, and for all gardens.—It requires not much more space than a currant or gooseberry bush. It bears early and abundantly, and the fruit is uniformly larger and finer than standard trees. The fruit is never blown off prematurely by high winds, and is easily gathered.—The trees are within reach of the cultivator, without the use of ladders, easily pruned, manured and otherwise tended, and if necessary may at any time be removed from one place to another, at any age, without interrupting seriously their productiveness. Besides, these miniature apple trees are among the chief beauties of the fruit garden. They strike us

at once as being adapted to the place, and in adaptation alone there is a great deal of beauty.

The cultivation of the apple in this form has, up to the present time, received little attention in this country. Indeed such a thing was entirely unknown until within a year or two, except to nurserymen and a few amateur cultivators around some of the older cities. Public attention seems now, however, to be turning to the subject, and we have no doubt but that as fast as they can be propagated, every little garden in the country will be enriched with them. The *Paradise stocks* used in this country are usually imported from France, and consequently dwarf trees are more costly than standards grown on free stocks, raised from seeds obtained at little or no cost, at the cider mills; but by and by our nurserymen will no doubt propagate their own stocks, and the trees will consequently become cheaper.

The *Paradise* is a species of apple that reproduces itself from seed, but is usually propagated for stocks by layers. Seedlings however, are preferable, as they have a tap root that holds them firmly in the soil, while those raised from layers have but fibrous roots that remain near the surface. There is another stock used for working on where trees are intended for pyramids; this is called by the French the *Doucin*, and is confounded by some authors with the *Paradise*. Trees grown on this attain a considerable size, while those on the *Paradise* seldom reach over four feet in height. The culture is the same as on free stocks as regards budding.

When plants are removed from the nursery, one year's growth from the bud, they should be invariably cut back till within three or four buds of the stock; and they should never be planted so deep as to place the bud or graft in the ground, as in that case it will emit roots, and the effect of the *Paradise stock* will be lost. We have heard people complain of their dwarf apples not bearing, but growing up vigorously like those on free stocks, and this was the cause. The soil should possess considerable firmness for dwarf apples as the roots remain so near the surface. Annual pruning is necessary to give the trees a good shape as well as to keep up their vigor, and they should also receive an annual dressing with compost. With this attention every one may succeed in raising crops of large and beautiful apples on their dwarf trees. Indeed the same attention that a good cultivator would give a gooseberry or currant bush will suffice for these little trees.

The above figure is the portrait of a tree in the garden of Aaron Erickson, Esq., of this city, some 6 years old, and has borne large crops of immense fruit, measuring 10 to 15 inches in circumference, for the last three years. The variety is the *Alexander*. Large apples, such as the *Alexander*, *Twenty ounce*, *St. Lawrence*, *Gravenstein*, *Hawley*, &c., will give the most effect on dwarf trees.

SELECT FRUITS.

At a late Pomological Convention, held at New York, the Fruit Committee, composed of some of the most distinguished pomologists in the Union after much care and deliberation, presented the following select list of fruits worthy of general cultivation. In preparing the lists, the committee

rejected every variety against which there were found to be three votes, and none were adopted which had not been extensively cultivated:—

APPLES—Early Harvest, Large Early Bough, American Summer Pearmain, Gravenstein, Summer Rose, Early Strawberry, Fall Pippin, Rhode Island Greening, Baldwin, Roxbury Russett. *Adapted to particular localities*, Yellow Bellflower, Esopus Spitzenburgh, Newtown Pippin.

PEARS—Madeleine, Bloodgood, Tyson, Bartlett, Seckel, Flemish Beauty, Beurre Bose, Beurre D'Arenburg, Winter Nelis, Golden Beurre of Bilboa. *Adapted to particular localities*.—White Doyenne, Gray Doyenne.

CHERRIES—Black Eagle, Mayduke, Graffion or Bigarreau, Black Tartarian, Knight's Early Black, Downer's Late, Elton, Downton.

PLUMS—Jefferson, Washington, Green Gage, Purple Favorite, Coe's Golden Drop, Bleeker's Gage, Frost Gage, Purple Gage. *For particular localities*, Imperial Gage.

PEACHES—Grosse Mignonne, Early York, (serrated,) Large Early York, George IV., Oldmixon Free, Cooledge's Favorite, Crawford's Late, Morris White, Bergen's Yellow. *For particular localities*—Health Cling.

ADDRESS OF HIS HONOR JUDGE DAY.

President of the Montreal Horticultural Society.

"I propose rapidly, and I fear I must add, very imperfectly, to pass in review some of the motives which may justify the effort we are making; and may perhaps, place the object and tendencies of our infant society upon a more elevated footing than they have hitherto occupied in most minds. It is not upon Horticulture as increasing the delicacies of the table, nor as furnishing to the opulent amateur the honest gratification of displaying his treasures of fruits and flowers, that I now design to speak; nor am I much disposed to address myself to those unimaginative matter-of-fact people who associate with a garden no other idea than it is a place where cabbages and cucumbers come from, and whose notions of improvement can get no further than they are carried by a sort of gastronomic instinct that it would be nicer to have green peas and melons in May than to wait for them till July. Not that I would undervalue or speak lightly of the useful, or in any degree damp the ardour of the amateur; but I would leave these branches of the subject to another opportunity, or to abler hands. The attractions to the pursuits of the garden which I now select for notice, are those which may be supposed to exert an influence in refining our tastes and promoting our moral and intellectual improvement. The age in which we live is one distinguished for its ceaseless activity, and its advancement in the practical arts of life. It is essentially utilitarian, and there is in it a strong and increasing tendency to reduce persons as well as things to the common level, and to exclude all other standard of value, than such as is based upon money, or is reducible to money's worth. This spirit has not left untouched the gifted minds of our day; and it is to be feared that, with many even of those most highly endowed, there is a tone less elevated than that which gave dignity and glory to the giants in our fathers' days. It has been said, and with at least a semblance of truth, that a great epic poem could not now be written; and it might be added, that if written, it would scarcely find a reader. The genius of poesy, perhaps of eloquence too, seems to have reached and passed its loftiest summit

amid another generation of men. The ideal is fading before the real. The imaginative is yielding to the visible and material; and man's energies are devoted from morning to night for days—for years—for life—to the hardening and narrow pursuits of gain. Amid the whirl and excitement of these pursuits, in the rivalry and conflict of the Exchange, the Bar, the Senate, there is no room for the unobtrusive and tranquil moralities of life. The ruder and more selfish qualities of our heads and hearts are constantly stimulated and strengthened, while no adequate agent is brought to shed its genial, counteracting influence upon them. It can scarcely be denied, that with reference alone to the enjoyment of this world, even in its most worldly sense, we have fallen into a grievous error, in devoting so much of our time and of our anxieties to what is called business; that is to the mere acquisition of wealth. Those high capacities of our nature for improvement, the deep and pure sources of happiness, which are at once so simple and inexhaustible, were not given us to be thus deadened and dried up by a sordid and unremitting labor.

"In the presence of so many who know, from experience, the enjoyment found in the cultivation of the garden and the pleasure ground, it will perhaps be deemed idle for me to dwell upon the subject. They know that it is impossible to be in habits of daily contact, intercourse I will call it, with the beautiful creations of the vegetable world, the fruits and flowers, which are not absent from even the most humble garden, without a feeling of admiration and interest being awakened which, if encouraged, opens up sources of gratification, as abundant as they are salutary to mind and body. Amid the health-giving exercises of the garden, with enough to interest, but nothing to agitate, the mind is withdrawn from the vulgar excitements which weary and corrode it; the heart is tranquilized, and looks forth as from a haven of rest, upon the tempest it has left behind. Then comes up the dominion of old thoughts; the fond recollections and endearing associations of childhood; the innocent spirit of other years returns upon us; a consciousness of the value of the simple, the natural takes possession of the soul; and man, for the time at least, casts off the artificial character with which he is girded as impenetrable armour to do battle with the world, and abandons himself to the grateful and sweet influences around him. Can it be doubted that pursuits which can induce and sustain such a feeling have a mighty power in refining, in elevating, in improving? But this is not all. The occupation and pleasures of the Horticulturist are not stationary; on the contrary they are ever varying and progressive. Independently of the successive changes which every day and every season call forth, there are new things to be produced and old things to be improved, and these in infinite number and variety; and to do this he must have knowledge—knowledge of the immutable laws by which the subjects of his care are governed; of the laws of their propagation and growth; of their mechanical structure, physiology, habits, and wants; all this cannot be acquired without patient observation and study, nor applied without intelligence and ingenuity.

"But I would fain convey to the less initiated (if there be any such here), by some more mode efficacious than my poor expressions can afford—by some Mesmerie transfusion of thought, (leaving out the sleepy part,) a sense of the pleasure which is to be derived from a patch of ground, of a few rods, nay, of a few feet in extent, cultivated with our own hands; containing plants of our own growth, reared by our own skill; watched over with almost parental care and anxiety, and rewarding our care by the gradual development of those indescribable beauties, which a beneficent Creator has so liberally bestowed in one form or another, upon a large portion of his vegetable kingdom.

"I would have them feel that the serene delight with which we contemplate the bursting rose, in its unrivalled loveliness and matchless perfume, is a link in that great chain of sympathies, which binds us in strong communion with external nature. The voice, half pensiveness, half joy, which whispers to the heart from that exquisite and blushing flower, is the same which is heard fearfully in the murmurs of the mighty ocean, or the deep roar of the cataract. It bursts in thunder from the cloud—it speaks from the smiling face of mountain and valley—of rich woodland and waving corn field—of sunny knoll and rippling stream. The song of the little birds sends it forth, and so does the majestic firmament of heaven. It speaks from the setting sun, as he sinks amid his gorgeous pavilion of purple and gold. It sighs softly in the dreamy hour of summer twilight; and then the silver moon, with the innumerable far-off twinkling stars, take up the wondrous tale. It is the universal voice of creation, which ever changing in its infinite variety of tones, is still the same; and thrills upon the soul of man with emotions and thoughts so deep, yet so indistinct—so little connected with the business of this world, and so mysteriously wandering, struggling, onward, upward, to another, we might almost believe that amid the ruin of our race, one chord of the glorious instrument was left unbroken by its Almighty Maker, to answer, in sweet but mournful and imperfect music, to the harmonies of all his works. Let it not be said that in all this there is nothing real, substantial, useful; that it is the mere exaggeration of a vivid fancy; for it is possible that these moral instincts are a more essential and enduring part of our being than the passions which now impel and govern the course of human affairs. There is a meaning in these high aspirations, called up by the eloquent appeals of the material world around us; and it may happen that when unnumbered ages shall have rolled over the buried hopes and fears, the ambitions, jealousies, triumphs and defeats, which make up life, this longing after the idea of beauty—this dim half-consciousness of the reality of things unseen, will be remembered and comprehended by an enlarged sense, and higher intelligence, when time shall be no more.

"Upon this ground, then, of its tendency to improve our moral and intellectual nature, would I persuade our fellow-citizens to aid us in our endeavour to establish and maintain the Society, which is the object of the present meeting. If the observations I have had the honour to submit to you have any foundation in truth, then our project must interest all classes, as being of a character to conduce to the enjoyment of all. It proposes nothing beyond the reach of the poor man, nothing beneath the notice of the wealthy. Its charms are such as address themselves to the educated and refined, and no dignity of rank, by extending to it a kindly sympathy, or an active participation.

"To our fair friends, upon whom we rely for much and zealous support, I address no solicitations, for I am not using the language of compliment but that of sober truth, when I say that woman's sensibility—her quick perception of the beautiful and excellent, in the moral as in the natural world; her purer aspirations, her more simple and quiet tastes—in all of which she far excels man's grosser nature—are a pledge that on her part no effort will be wanting to secure a vigorous and active existence to an institution, the objects of which accord so well with the essential tone and texture of her own character."

VALUE OF LEAVES.—What shall I do with my leaves? Are they good for anything? asks a correspondent. Do with them! good for anything! Why treasure them to be sure, as if they were coin of the realm; they are good for everything which a gardener has to do. They are the best of all materials for bottom-heat,

the best of all soil, the best of all drainage, the best of all manure. It is true they contain little or no nitrogen, but they rot quickly, are full of saline matters, on which everything that bears the name of plant will feed gluttonously, and from their peculiar structure allow air to pass in and water to pass out with perfect freedom.

If we wish to know what leaves are good for, we have only to burn them and see what a quantity of ash they leave behind. All that ash is as much food for other plants as beef and mutton are for us. It is the material which Nature is perpetually restoring to the soil in order to compensate for the waste which is produced by the formation of timber. In wild land, trees are annually thus manured; were it otherwise a wood would be a roof of life overshadowing a floor of death. If we can remove the leaves from our plantations, it is only because of the artificial richness of the soil in which they grow. This sufficiently indicates the value of leaves, which are in truth hardly less important in their death than they were in their life, though in a different way.—*Gardeners' Chronicle.*

CHEAP FOOD.—At a meeting of the Académie des Sciences, on the 16th ultimo, a paper was read by M. Payne, on the part of the author, M. Flandin, who exhibited some specimens of horse chestnut fecula, entirely deprived of bitterness, and other specimens of bread and biscuits prepared with one part of this fecula and three parts of wheat flour. The author declares that a horse chestnut is worth as much as a potatoe, and that two trees bearing this fruit at the door of every cottage in the country are equivalent to several acres of potatoe fields, the more so, as the horse chestnut almost always yields a good crop and requires hardly any care.

SLUGS.—The most effectual remedy against the depredation of slugs and snails is to strew fine sifted ashes with a little soot and lime, well incorporated together, over the ground directly the seed is sown, and again when the plants are coming up; the lime and soot will form a coat over the stems and leaves of the tender plants, until they are strong enough to resist the injury, and the sharp rough particles of coke or coal ashes, will prevent their passing over it. The best time to sprinkle is when the dew is on the ground, or after a shower.—*Gardiner's Chronicle.*

SWEET POTATOES.—A small parcel of this root has been received by Messrs. Keeling and Hunt from Madeira. The cultivation of sweet potatoes, as well as other kinds from English seed, is being increased to supply this market; and as the voyage is now made from Madeira to Southampton on an average of from 11 to 12 days, they arrive in sound condition. Oranges and Bananas are also being cultivated to a considerable extent for consumption in England, and a parcel of them arrived by the same ship.

SEA SAND.—It is a fact not a little interesting (says Sir H. De La Bèche) that sand thrown by the sea upon the coast of Cornwall is very extensively employed in the interior of the country for agricultural purposes.—Vast quantities of this sand (estimated at 10,000 tons) are annually taken from Badstone harbour to the interior, and this cannot be considered more than one-fourth part of the whole quantity removed. Between five and six millions of cubic feet of sand are thus annually conveyed from the coast, and spread over the land in the interior as mineral manure. In this case, however, the sand is not silicious, but consists almost entirely of comminuted sea shells, and thus affords the requisite supply of carbonate of lime to the clayed lands of the interior.

Mechanics and General Science.

ICE-HOUSE.

A respectable correspondent having requested information through our journal, as to the best mode of constructing an "Ice-House," we select the following from a standard American authority. We give the article entire, as the information it contains will prove useful to our readers generally. It will be seen that the *Winter* is not the time to make an Ice-House; like many other undertakings, it should be thought of beforehand.

A house or vault for the preservation of ice in summer, should not be regarded as merely administering to purposes of luxury, since ice contributes so much to the convenience, comfort, and even health, as to make it almost an indispensable article of domestic economy. The effects of the excessive heat which commonly prevails in the summers of the United States, are greatly obviated by the use of ice, which not only serves for the preservation of fresh meats, butter, &c.; but, in addition to these advantages, and its grateful employment for assuaging common thirst, it is a powerful agent in tranquillizing the irritability of the stomach in bilious fevers and dysenteries, and relieving the pain and burning heat often attendant upon inflammations and fevers. Thus, by soothing the stomach, and removing excessive heat, iced drinks and applications restore the deranged functions of the nervous and muscular systems of the sick, whilst they refresh and invigorate persons in health, so as to render them capable of enduring exercise and exertion even under circumstances calculated to produce great oppression and inconvenience.

An interesting writer has left the following testimony in favour of ice, as a restorative and remedy in fevers, which has been abundantly corroborated by subsequent experience. "I never," says he, "was in better spirits than here in this hot country (Sicily). I believe the quantities of ice we eat, in ices, contribute to it; for I find, in a very violent heat there is no such cordial to the spirits as ice, or a draught of iced water. Its cold braces the stomach, and gives a new tone to the fibres. I knew an English lady, at Nice, soon cured of a threatening consumption, by a free indulgence in the use of ices. It is the common practice here, Sicily, to give quantities of iced-water to drink in inflammatory fevers." (*Brydone*.)

"The custom in Sicily and Italy," says another author, "of taking ice, is considered as a powerful remedy in many diseases. The physicians of these countries do not give many medicines; but frequently prescribe a severe regimen; and prevent the baneful effects of various diseases, by suffering the sick, for several days, to take nothing but water cooled by ice, sweet oranges, and iced fruits." (*Stolberg*.)

One of the greatest advantages afforded by ice houses, is that of enabling families to preserve their butter, meat, fish, poultry, game, &c., in states of the weather which would otherwise induce them to spoil. In no part of the world are ice-houses more

essential to comfort, convenience, and health, than in the United States, and in all the northern and Middle States the winters are sufficiently cold to furnish ice of sufficient thickness to lay by for preservation. The cities of the Southern States are now regularly supplied with thick blocks of ice from New England, which not only afford a regular article of export to the West Indies, but also to Calcutta!

Considering the small expense and trouble at which ice-houses or vaults may be constructed, and the many advantages to be derived from them, it is surprising that any respectable country establishment should be without one.

It is considered, that the simplest, and most scientific form for an ice-house, is a double cone, that is to say, two cones joined base to base, the one sunk into the earth with its point downwards, into which the ice is rammed; the other being a conical roof, generally of wood-work, covered with thatch, and pointed at top. The entrance should be placed always on the north side, and provided with two doors some distance apart, and the spot screened from the sun by trees, shrubbery, a hill, cliff, or other barrier. The lower part may be dug about 16 feet in diameter, terminating below like the point of a sugar-loaf. Its ordinary depth, for a moderate family, may be about 24 feet. The larger the dimensions, the longer will it preserve the ice, provided it be filled. In digging, the workmen should slope the ground progressively towards the axis of the cone, to prevent the earth falling in. This conical slope should be faced with brick or stone work about one foot thick, and jointed with Roman cement, so as to be air and water tight. A well is to be excavated at the bottom, two feet wide and four deep, covered at top with an iron grating for supporting the ice, and letting the water drain away.

The upper cone may likewise be built of brick work, and covered with thatch; such a roof would prove the most durable. Whatever kind of roof be preferred, there must be left in it an oblong passage into the interior. This porch should face the north, and be at least 8 feet long by 2½ feet wide; and perfectly closed by a well-fitted door at each end. All round the bottom of this conical cover, a gutter should be placed to carry off the rain to a distance from the ice-house, and prevent the circumjacent ground from getting soaked with moisture.

The ice-house should have no window to admit light; but be, so to speak, hermetically sealed in every point, except at its cess-pool, which may terminate in a water-trap to prevent circulation of air.

A clear day should be selected for charging the ice-house; but before beginning to fill, a quantity of long dry straw should be laid on the bottom crosswise; and as the ice is progressively introduced, straw is to be spread against the conical sides, to prevent the ice from coming in contact with the brick or stone work. The more firmly compacted the ice is, the better does it keep. No layers of straw should be stratified among the ice, for they would make its body porous. Some persons recommend to pour in a little water with the successive layers of ice, in order to fill up its small crevices and convert the whole into one solid mass.

Over the top-layer a thick bed of straw should be spread, which is to be covered with boards surmounted with heavy stones, to close up the interstices in the straw. The inner and outer doors should never

be opened at once; but the one should always be shut before the other is opened.

Dry snow well rammed keeps equally well with hard ice, if care be taken to leave no cavities in the mass, and to secure its compactness by sprinkling a little water upon the successive charges.

To facilitate the extraction of the ice, a ladder is set up against its sloping wall at one side of the door, and left there during the season. (*Ure's Dict.*)

The time preferred for filling an ice-house, should, when practicable, be during the prevalence of extreme cold, or as soon after as possible, since the colder the ice when packed away, and the thicker the blocks, the longer it will last. Ice and snow can often be laid by, even in the Middle States, many degrees below 32° or the common freezing point of water. The larger the quantity of ice accumulated in one place, the slower will be the rate at which it will melt.

One of the principal objects to be kept in view in the construction of an ice-house is, to have it so that the water will pass off directly, as fast as the ice thaws. If the situation is sandy, or if you come to a layer of sand or gravel about the proper depth, no further care will be necessary; but if you find a stiff clay, rock, or earth of any kind impervious to water, you must contrive an outlet or abandon the place. This outlet may be constructed in several ways. If on the side of a hill, dig a drain and make it air-tight by means of a water-trap or inverted syphon; or the water may be drained into a well and pumped out; or you may sink a well in the bottom until you come to sand or gravel, and fill it up with stone. The cellar walls may be laid with stone, brick, or even lined with wood, as is most convenient or economical. A space of 8 or 10 inches is generally left between the wall and surrounding earth, which is filled in with tan, charcoal, straw, corn-stalks, or any other non-conductor of heat, the first-named article being generally preferred. A house 9 feet square in the clear, and 9 feet deep, will hold about 25 cart-loads of ice, which will be enough for a large family.

A cheap ice-house may be made thus;—Dig a cellar, say 10 feet square, and 10 feet deep. Then cut small timber from the woods the proper length, and build up in the cellar after the plan of building log-cabins, leaving a space between the logs and earth to be filled in with straw, tan, or other suitable material. Raise the wooden walls 2 or 3 feet above the surrounding ground, and heap up a bank so as to turn off the rain-water. A thatched roof is generally recommended, as the best to keep out heat, but some object to such covering as affording harbour to rats and other vermin.

The importance of keeping ice well surrounded with a non-conductor, and having the water absorbed as fast as melting takes place, is shown in the following extract from the *Kentucky Farmer*:—

"We take at sunrise from the ice-house, as much as will be probably wanted through the day, and cover it up in some saw-dust placed in a barrel in the dairy-house. At night, the size of any given piece is scarcely perceptibly diminished. It is a perfect charm."

In some parts of the United States, where thick ice is rare, some persons pack away large quantities of snow, which, if the mass be large, and the snow dry or previously well drained, will often keep

through the whole summer. In most seasons ice may be collected in sufficient quantities to fill ice houses in every latitude of the Middle States. If no pond or stream of water of sufficient size be at hand, advantage may be taken of any little rill, which, by the erection of a small dam, may be made to overflow a considerable space. If the water be not more than 6 or 8 inches deep it will answer every purpose.

In stowing away ice the pieces should be as square as possible, and as large as they can be got or handled. They should be placed closely together like stone in a wall, and the crevices well filled with smaller fragments. The plan sometimes recommended of pounding or crushing the large pieces is reprehensible.

¶ We had intended to continue our remarks on the *Plough* in this number, but the cuts which were to have been used to illustrate them, not being ready in time, we must defer the article till our next issue.

RELATION BETWEEN ANIMALS AND THE COUNTRIES THEY INHABIT.—In whatever way we view it, the relation between the domesticated animals and the wealth and beauty of any and every land, is almost equally conspicuous. There is no doubt that these animals were the more immediate preparers of the land for civilised man; and this is the chief reason why civilisation has never made any advance worth mentioning, except in countries where these animals are found. Indeed, be the geographical position and climate what they may, we know not how any number of human beings, adequate to the originating of a localised and civil society, could exist, without the assistance, if not of the absolutely domesticated species, at least of the wild races of these animals. It is true that there are some farinaceous roots which offer a substitute, but only a poor substitute, for bread; and reptiles, insects, and mollusca, are still more humble apologies for beef and mutton; but these are sorry food for a nation. In the case of fruits it is not much better; for although there are some delightful wild fruits in the Oriental isles, and some passable ones in inter-tropical America; yet they are by no means general, and they are as unsatisfying for hunger in their qualities, as they are limited in quantity, and partial in their distribution. The surface of Australia is equal to that of all Europe; and, with the solitary exception of fern root, and some plants that answer as a sort of spinach—both of which are confined to particular spots, there is not one native esculent vegetable in the whole of its ample extent. Of the number of its native population, we have no means of judging; but they certainly do not amount to a single individual to every hundred square miles of surface.

Now, from its position on the globe, the climate of the whole of Australia ought to be one of the best in the world,—a sort of triple compound of spring, summer, and autumn, with very little winter; and we have at least one evidence of this in the mild uniformity of temperature in Van Dieman's island. But although the atmosphere which the surrounding ocean brings to Australia, would be mild, uniform, and eminently favourable to vegetation, if it met with a corresponding surface—a surface capable of receiving the benefit which it is calculated to bring; yet the greater part of the surface seems to be of the most wretched character—covered with saline efflorescence at one season, and seamed with brine-contaminated streams at another.

There is no meadow there, as in Europe; no green savannah, as in North America; and yet the climate ought to be better than either of these. What can be the cause of this difference? It is not wholly the form of the surface, or the geological character of the strata; for these are not very dissimilar to those of countries which present a very different appearance. The trees and almost all the vegetables, are, no doubt, different; but, as is the soil, so is the vegetation, is very nearly a maxim in nature. No savannahs were found in Australia, because there were no beeves or buffaloes to graze upon them; and the grasses upon the uplands were in wiry tufts, few and far between, because there were no sheep to pasture there. The Kangûrû was the only grazing animal; and it is not adapted to fine grasses, either in the structure of its teeth, or in those of its organs of locomotion.

The proper grazing mouth is that which has eight chisel-shaped cutting teeth in the under jaw, acting against a cartilaginous surface of the upper. These cut the herbage clean, without that pulling up by the roots which is apt to be performed by a mouth of any other structure. The mouth of the great Kangûrû also contains eight cutting teeth; but they are very differently dispersed; for there are only two of them in the under jaw, and there are six in the upper. A mouth of this kind makes a ragged bite, and cankers the remainder of the vegetable upon which it feeds; so that a flock of kangûrû would very soon destroy the grass of a park or meadow. Besides, the whole structure of the Australian animal, fits it for a mode of life quite different from our grazing *Ruminantia*. The insignificant bulk of the anterior parts, the vast development of the posterior, the strong and rigid tail, which, with the two hind legs, makes a tripod upon which the animal can stand while it uses the short fore legs as a sort of paws, and the marsupium for the young, are all modifications for which there is no use in a grazing animal, but which would render such an animal very unfit for its place and office in nature.

The mouths of those pachydermatous animals which are domesticated, are also biting mouths, not grazing ones; and therefore their browsing does not improve the pastures to the same extent as that of the ox and the sheep. The cutting teeth of the horse and the ass are six in each jaw, and the males have always canine teeth, or tusks; and the hog genus have always six in the upper. They have also canines or tusks, which are very long and formidable in the male of the wild hog; but they are not true teeth, with a fang inserted in the alveola of the gum, like the canine teeth of the *Carnivora*; neither is their purpose that of killing prey,—they are inserted or formed upon a core of bone, and come under the description of defences, although they are also of use in holding one end of certain kinds of food, while the animal places the fore foot on the other, and so tears it to pieces. We need not say that the feeding of hogs does not in any way conduce to the improvement of the pastures upon which they are turned; for, if they are not ringed to prevent them from rooting, they plough up the surface and devour the roots of the plants. Even the horse, which comes perhaps the nearest to a grazing animal of all the order to which it belongs, cannot be said to be an improver of the surface. Its bite is ragged, and it is apt to tear up the herbage in tufts; and unless it can get "a long bite," it cannot subsist.

The characteristic grazing mouths are therefore those of the ox and the sheep—of which that of the sheep is decidedly the neatest; and, when either the one or the other of these is turned upon the proper pastures, not in too great numbers, they always improve the quality of that pasture. Sheep, indeed, bite so close, that they cannot be, with impunity, turned upon some of the more valuable artificial grasses; for

those grasses have crowns, or coronal plates, at or above the surface of the ground, from which alone, vegetation can be made; and if these are nibbled off, or even jagged and torn by sheep, the plants grow no more.

Oxen do not bite either so clean or so close as sheep; and therefore they require more rank herbage; but they can be allowed to pasture upon fields of those plants, the crowns and the vegetation of which would be destroyed by sheep. Thus, when we take even a very cursory view of the animals which have been domesticated, we are brought to the three ruminants, the ox, the sheep, and the goat, as the ones which first enticed man to have a fixed residence, and become a herdsman, and thence a cultivator; but which of them may have taken the lead is indeterminate.—*Mudie*.

FURS OF THE HUDSON'S BAY TERRITORY.—The most valuable of the furs is that of the black fox. This beautiful animal resembles in shape the common fox of England; but it is much larger and jet black, with the exception of one or two white hairs along the back bone, and a pure white tuft on the end of the tail. A single skin sometimes brings from 25 to 30 guineas in the British market; but, unfortunately, they are very scarce. The silver fox differs from the black fox only in the number of white hairs with which its fur is sprinkled; and the more numerous the white hairs the less valuable does it become. The cross fox is a cross between the black or silver and the red fox. The red fox bears a much inferior fur to the other kinds; yet it is a good article of trade, as this species is very numerous. These four kinds of foxes are sometimes produced in the same litter, the mother being a red fox. The white fox bears about the same value as the red, and is also very numerous, particularly on the shores of Hudson's Bay. The variety termed the blue fox is neither numerous nor very valuable. It is of a dirty bluishgray colour, and seldom makes its appearance at the company's posts. Beaver, in days of yore, was the staple fur of the country; but, alas! the silk hat has given it its deathblow, and the star of the beaver has now probably set for ever; that is to say, with regard to men: probably the animals themselves fancy that their lucky star has just risen. The most profitable fur in the country is that of the marten. It sometimes resembles the Russian sable, and generally maintains a steady price. These animals, moreover, are very numerous throughout most parts of the company's territories, particularly in M'Kenzie's River, whence great numbers are annually sent to England. All the above animals, and a few others, are caught in steel and wooden traps by the natives; while deer, buffaloes, &c. are run down, shot, and spared in various ways.—*Ballantine's Hudson's Bay*.

INTERIOR OF THE EARTH.—Professor Silliman has, among other matters of interest, concerning which he has made some very valuable observations, provided us also with the following suggestions. A fact, he remarks, of great interest has been proved by the borings for Artesian wells in the suburbs of Paris, namely that as we go towards the centre of the earth, the temperature increases at the rate of about one degree for every fifty feet. That the whole interior portion of the earth, or at least a great part of it, is an ocean of melted rock, agitated by violent winds, though I dare not affirm it, is still rendered highly probable by the phenomena of volcanoes. The facts connected with their eruption have been ascertained and placed beyond a doubt. How then are they to be accounted for? The theory prevalent some years since, that they are caused by the combustion of immense coal beds, is perfectly puerile, and is entirely abandoned. All the coal in the world would not afford fuel enough for a single capital exhibition of Vesuvius. We must look high—

er than this; and I have little doubt that the whole rests on the action of electric and galvanic principles, which are constantly in operation in the earth.

We know that when certain metals are brought together, powerful electric action is evolved, and a light is produced, superior even in effulgence to the splendour of the sun. Now if a small arrangement produces such results, what may we not expect from the combination of those immense beds of metals to be found in the earth? Here we have the key to all the phenomena of volcanic action. An illustration on a small scale may be seen in an instrument called the thermo-electrical battery, made of zinc, bismuth and antimony packed in a box and varnished. In this, heat is evolved below, while the top is cold; and here we have the very cause of the volcano, where in the interior a fiery ocean is heaving its surges, while its peak is capped with everlasting snows.

PATENT WAGON.—Mr. Start, of Smyrna, Delaware, has made an improvement in manufacturing wagons which will certainly be a great advantage to the farmer, inasmuch as it will effect a great saving in labor. The bed of the wagon is placed on small rollers, fixed in the frame work on which it rests, and in front is a fixture for a lever by which a lad can run the wagon bed and shoot its contents on the ground.—It would seem that this wagon can be introduced to great advantage, among those who haul fresh lime or manure on their farms, as they can at once discharge the load just as readily as they can that of a cart, thereby saving, where the load is lime, an hour's work or more. Old wagons at a slight expense, say some ten or fifteen dollars, can be rigged on this plan. It was exhibited at the Newcastle County Cattle Show, and was highly spoken of by the gentlemen who examined it.—*Farmer and Mechanic*.

INTERESTING FACT IN ANIMAL CHEMISTRY.—In some pathological conditions there has been observed, at points where bones and muscles meet, an accumulation of free lactic and phosphoric acids, which has never been perceived at those points in the normal state. The solution and removal of the phosphate of lime, and therefore the disappearance of the bones, is a consequence of this state. It is not improbable that the cause, or one of the causes, of this separation of acid from the substance of the muscle is this—that the vessels, which contain the fluid of the muscles, have undergone a change, whereby they lose the property of retaining within them the acid fluid they contain.—The constant occurrence of chloride of sodium and phosphate of soda in the blood, and that of phosphate of potash and chloride of potassium in the juice of flesh, justifies the assumption that both facts are altogether indispensable for the processes carried on in the blood and in the fluid of the muscles. Proceeding on this assumption, the necessity for adding common salt to the food of many animals is easily explained, as well as the share which that salt takes in the formation of blood, and in the respiratory process.—*Liebig's Researches on the Chemistry of Food*.

SEWING MACHINE.—Morey & Johnson have invented a sewing machine, which is now successfully employed in the different factories of Lowell, and will sew from 2 to 4 yards in a minute, according to the size of the stitch, whether fine or coarse. It is also used by many of the factories of Boston, and many other places in Connecticut. At New London there is one machine which sews 30 pair of pants a day, or does about half the entire sewing required to make them complete. The machine of Messrs. Morey & Johnston will sew 40 bags per hour, and contracts have been made for making them by this machine at 1 1-4

cents per piece. The sewing too is decidedly stronger and more uniform than that which is done by hand, and it will perform in the same space of time about ten times the amount of work which can be done in the usual way. The expense too of making this machine is quite moderate, and agencies have already been sold to the Eastern and our own States. An agent, Mr. E. P. Whitmore, who has been appointed for the purpose, for the Southern and Western States, is about visiting the South, to dispose of them in those sections of our country.—*Farmer and Mechanic*.

A NEW LIFE PRESERVER.—We witnessed, says the *Scientific American*, many curious scenes in the city during this week and last, and among the rest we were particularly struck with the properties of a new life preserver invented by Messrs. Ralston and Phillips, the former of Washington Co. and the latter of Pittsburgh, Pa. It consists of an improved dress of india rubber cloth, part of which is inflated, and in which the swimmer is encased. We saw Mr. Ralston enjoy a rough and tumble in the East River, and he came out, threw off his preserver and (having all clothes on) not a thread was wet. A young man of the name of Lowell, crossed from Williamsburg to this city in it—a distance of about three miles, with steam-boats passing him every few minutes, and when he arrived at Peck Slip, he came out of his shell dry, ready for parade. It is a most excellent invention, and Mr. Ralston informs us that he has applied for a patent.

A person wearing one of these life preservers can carry from fifty to one hundred lbs., in addition to their person, and float four persons in the water, without sinking, and can take no other position in the water, except with the head and shoulders entirely above the water.

The entire person save the face, is enclosed, enabling the wearer to float in an erect, or sleep in a reclining posture, or with paddles which are attached, propel himself at the rate of three miles per hour. His person is kept entirely dry, and the heat of his body is so retained, that he is warm and comfortable, when floating on the water in cold weather.

IMPORTANT DISCOVERY.—Under this head a correspondent of the *Southern Reporter* has the following:—"Within the last few days I have been informed on indubitable authority, that some of the talented and scientific gentlemen connected with the Royal Irish Fisheries Company have discovered that the celebrated fishing banks of Newfoundland actually extend across the Atlantic to within 100 miles of Ireland! and the quantity of fish on the said banks is more than sufficient to supply the markets of the whole world."

SELF-PRIMING FIRE-LOCK.—This is an invention of Mr. Walter Hunt, of N. Y., says the *Farmer and Mechanic*, and is a valuable improvement for priming and discharging fire-arms. The improvement can be adapted to either flint or percussion locks, by a very trifling alteration. The gun on exhibition at the Fair is an old U. S. musket, which had a flint lock, and the only change apparent in it is a neat little magazine in the place of the hammer-steel, and a steel point in the place of the flint. The alterations are all external. The act of cocking the gun deposits a priming of Guthrie's percussion pill-powder from the Magazine, which may be made to contain enough for fifty or five hundred charges. The lock is water-proof and appears to be perfectly infallible in discharging; indeed, it seems quite impossible to miss fire so long as percussion pills remain in the Magazine. Competent judges pronounce it superior to all known locks, and they say that the percussion cap will be finally exploded.

Domestic.

"THY WILL BE DONE."

The following beautiful and pious effusion is from a memoir of Miss Alexander, the daughter of the late Bishop of Jerusalem:

My God, My Father, while I stray,
Far from my home on life's rough way,
O, teach me from my heart to say,
Thy will, O God, be done.

If thou shouldst call me to resign
What most I prize—It ne'er was mine,
I only yield thee what was thine;
Thy will, O God, be done.

E'en if again I ne'er should see
The friend more dear than life to me,
Ere long we both shall be with thee;
Thy will, O God, be done.

Should pining sickness waste away
My life, in premature decay,
My Father, still I'll strive to say,
Thy will, O God, be done.

If but my fainting heart be blest
With thy sweet Spirit for its guest,
My God, to thee I'll leave the rest;
Thy will, O God, be done.

Renew my will from day to day,
Blend it with thine, and take away
All that now makes it hard to say,
Thy will, O God, be done.

And when on earth I breathe no more
Thy prayer, oft mixed with tears before,
I'll sing upon a happier shore,
Thy will, O God, be done.

USEFUL RECIPES.

We wish in this early part of our work, to make one remark, applicable to all selections under the above head. *We do not guarantee the excellence or harmlessness of any recipe, unless we do so in express words.* The reader will always be able to distinguish our remarks from those of other writers, by the free, open appearance of the type in which they are set, all editorial which we wish to have so regarded being "*leaded*" as the printers say, and extracted matter "set close." The difference between the two is exhibited in what we are writing and the extracts that follow.

We meet with a variety of recipes in our exchanges, some of them very valuable, and others probably worthless, and as it is impossible for us to put them to the test of experiment, we shall publish such as *appear* worthy of notice, and leave it to the reader to *prove* them. Great benefit is sometimes derived from a simple recipe. We have been told by two of our last year's subscribers, that a remedy which we published for the dysentery, had saved the lives of their children after the doctor had given them up. One of our agents assures us, that he has heard of several similar instances. We are no believers in the doctrine that any sin-

gle remedy will succeed or be proper to be used in every case, but it may often happen that the remedy recommended is adapted to the particular case, and in the absence of a physician may save life. At all events it is a good thing to know the remedies for any disease; the emergency may arise when that knowledge will prove invaluable.

In the various operations of the housewife, the results of past experience, and modern discovery, embodied in the form of simple receipts, are oftentimes highly serviceable. And we believe we cannot do a more acceptable favour to many of our fair readers, than to devote a column or two in each number to their particular use, by selecting matter of this description, the reader always bearing in mind what we have said above, that we assume no responsibility in the matter.

A GOOD WAY TO USE SOUR BREAD.—When a batch of bread is sour, let it stand till *very* light, and use it to make biscuit for tea or break-fast, thus:

Work into a portion of it, saleratus dissolved in warm water, enough to sweeten it, and a little shortening, and mould it into small biscuits, bake it, and it is uncommonly good. It is so much liked, that some persons allow bread to turn sour for the purpose. Bread can be kept on hand for this use any length of time.

ANTIDOTE TO POISON.—A correspondent of the London Literary Gazette gives the following antidote:—

"I may venture to affirm there is scarce even a cottage in this country that does not contain an invaluable, certain and immediate remedy for such events—nothing more than a dessert spoonful of made mustard, mixed in a tumbler glass of warm water, and drank immediately. It acts as an instantaneous emetic, is always ready, and may be used with safety in any case where one is required. By making this simple antidote known, you may be the means of saving many a fellow creature from an untimely end."

CURE FOR A BURN.—Take essence of peppermint and whiskey, in proportions of one part peppermint and three of whiskey, and apply with cloths. It gives instant relief. Peppermint and sweet oil is equally good, if applied with cotton.

COUGH SYRUP.—Take of Iceland moss two ounces, four poppy heads, four tablespoonsful of barley; put in three pints of water, boil down two, and strain it. Add one pound of sugar. Dose—a tablespoonful whenever the cough is troublesome. Another—boil down thoroughwort to a thick syrup, and sweeten with molasses. This cures when other remedies fail.

FOR A VIOLENT COLIC PAIN IN THE SIDE.—Mix an equal quantity of spirits of lavender, spirit of sal-ammoniac, add Hungary-water; rub it in with a hot hand, and lay a flannel on as hot as you can bear it. Repeat this often.

FOR A CONSUMPTIVE COUGH.—Take half a pound of double-refined sugar finely beat and sifted; wet this with orange-flower water, and boil it up to a candy height; then stir in an ounce of cassia-earth finely powdered, and use it as with any other candy.

TO MAKE BOOTS WATERPROOF.—Take bees-wax, tallow or mutton suet, equal parts, resin a tenth part of the whole; melt and mix together; apply the mixture hot to your boots, and they will last twice as long, and you will never complain of wet feet; the leather will absorb a quantity of the mixture, and it must be applied hot, until the boots are thoroughly saturated, both soles and uppers.

FELON.—Take blue flag root and wild turnip a handful of each, stew them in a half pint of hog's lard, then

strain them; add four teaspoonsful of tar, and simmer together. Apply this ointment until it breaks. Add bees-wax and resin to the ointment, for a salve, to dress it with after it breaks. This is an infallible cure, without losing the joint. The root of the fleur-de-lis, the Iris of our gardens, boiled soft and mashed fine, with a little meal or flour to make a poultice, is another safe and sure remedy. The poke root is said to be equally as good.

A USEFUL RECIPE.—Take a pint of pulverized charcoal, and put it into a barrel of new cider, and the cider will never ferment, will never contain any intoxicating quality, and is more palatable the longer it is kept.

FROSTBITTEN FEET.—Dissolve half a pound of alum in one gallon of warm water, and soak fifteen minutes.

TO KILL RATS.—Heat plaster of Paris in an iron vessel till it has done boiling, and mix half and half with Indian meal. Rats eat it freely, and it sets in their stomachs and kills them without the danger of giving them poison.

CURE FOR WARTS ON ANY PART OF THE BODY.—Make a strong solution of corrosive sublimate, wet the wart three or four times a day, never fails of curing.

TO PREVENT DISEASE.—Keep the stomach well cleansed; be regular in your diet; cleanse the skin often with clean cold water, or with the addition of a little white lye and salt, or with soap suds; rub the surface after washing, with a coarse cloth until warm. If you cannot use cold water, use warm; keep your head cool and your feet warm and dry, and you will have but little disease, and no doctor's bills to pay.—*Michigan Farmer.*

TO PRESERVE BUTTER.—We condense the following recipe for preserving butter from one of our exchanges. It is said to be much used in Goshen, Orange County, a place famous for its superb butter.

Composition: Take of sugar one part; of nitre, one part; and of the best Spanish great salt, (or rock salt,) two parts. Beat the whole into a fine powder, mix them together, and put them by for use. Of this composition one ounce should be put to every sixteen ounces of butter; mix it thoroughly with the butter as soon as it has been freed from the milk, and put it without loss of time down into the vessel prepared to receive it, pressing it so close as to leave no air holes or any kind of cavities within it. Smooth the surface, and if you expect it will be above a day or two before you can add more, cover it up close with a piece of clean linen, and above that a piece of wetted parchment, or for want of that, fine linen that has been dipped in melted butter exactly fitted to the edges of the vessel all round, so as to exclude air as much as possible, without the assistance of any watery brine; when more butter is to be added, those coverings are to be taken off, and the butter applied close above the former, pressing it down and smoothing it as before, and so on till the vessel be full. When it is quite full, let the two covers be spread over it with the greatest care, and let a little melted butter be poured all round the edges so as to fill up every cranny, and effectually exclude the air. A little salt may then be strewed over the whole and the cover be fixed down to remain close shut till it be opened for use.—If all this be carefully done, the butter may be kept perfectly sound in this climate for many years. How many years I cannot tell; but I have seen it two years old, and in every respect as sweet and as sound as it was when only a month old.

Butter cured in this manner does not taste well till it has stood at least a fortnight after being salted; but after that period has elapsed it eats with a rich marrow taste that no other butter acquires; and it tastes so little of salt, that a person who has been accustomed to

eat butter cured with common salt only, would not imagine it had one-fourth part of the salt necessary to preserve it.

FEMALE CULTURE.—The great entertainments of all ages are reading, conversation, and thoughts. If our existence after middle life is not enriched by these, it becomes meagre and dull indeed. And these will prove sources of pleasure just in proportion to previous intellectual culture. How is that mind to have subject matter of pleasurable thought during its solitary hours, which has no knowledge of the treasures of literature and science, which has made no extensive acquaintance with the distant and the past? And what is conversation between those who know nothing? But on the other hand, what delight is that mind able to receive and impart which is able to discuss any topic that comes up with accuracy, copiousness, eloquence, and beauty! The woman who possesses this power can never fail to render herself agreeable and useful in any circle into which she may be thrown, and when she is so she cannot fail to be happy. A full mind, a large heart, and an eloquent tongue, are among the most precious of human things. The young forsake their sports and gather around, the old draw nigh to hear, and all involuntarily bow down to the supremacy of mind. These endowments add brilliancy to youth and beauty, and when all other charms are departed, they make old age sacred, venerable, and beloved.

FEMALE DELICACY.—Above every other feature which adorns the female character, *delicacy* stands foremost within the province of good taste. Not that delicacy which is perpetually in quest of something to be ashamed of, which makes a merit of a blush, and simpers at the false construction its own ingenuity has put upon an innocent remark; this spurious kind of delicacy is as far removed from good taste, as from good feeling and good sense; but that high-minded delicacy which maintains its pure and undeviating walk, alike among women as in the society of men, which shrinks from no necessary duty, and can speak when required with seriousness and kindness of things at which it would be ashamed indeed to smile or blush—that delicacy which knows how to confer a benefit without wounding the feelings of another, and which understands also when to receive one—that delicacy which can give alms without display, and advice without assumption, and which pains not the most humble susceptible being in creation. This is the delicacy, which forms so important a part of good taste, that where it does not exist as a natural instinct, it is *taught* as the first principle of good manners, and is considered as the universal passport to good society. But this, the greatest charm of female character, if totally neglected in youth can never be acquired in after life. When the mind has been accustomed to what is vulgar, or gross, the fine edge of feeling is gone and nothing can restore it. It is comparatively easy on first entering life, to maintain the page of thought unsullied, by closing it against every improper image, but when such images are allowed to mingle with the imagination, so as to be constantly moved by memory, and thus to give their tone to the habitual mode of thinking and conversing, the beauty of the female character is gone, and its glory departed.—*Ellis.*

CLAY GOOD WITH SOAP.—A foreign paper states that a little pipe clay mingled with the soap is a great aid in washing clothes clean. We once knew a poor family who took in washing and became quite famous in the city near which they lived for the cleanness which the clothes washed by them exhibited. All the water they had to use was taken from an old clay pit near a brick yard.—*Maine Farmer.*

Miscellaneous.

EFFECT OF MUSIC ON REMEMBRANCE.—The evening bell of a village church sounds cheering and hospitable to every ear, and vividly do its strokes bring back to our recollection, with the days of infancy, our birth-place, the place where we learned to know our first joy, our first sorrow; for if certain sounds act on the nerves, those which remind us of the past, which express a sentiment and reveal a feeling, must have an effect of a higher kind upon the soul. It would be difficult to mark the limit where the operation upon the senses and that upon the soul begins or ends. These are mysteries which lie beyond the surface of our attainments, but of which we have, however, many indubitable proofs. Melodies which we heard in our childhood, a song—the poorest as music or poetry—if it bring to our mind recollections of earlier and happier times, if it remind us of places and occurrences, or more still of persons whose memory lies near to our heart, who can doubt that its effect will be powerful, and a thousand times more so than a composition infinitely richer, more regular, more harmonious and scientific? The “Rans des Vaches” is originally nothing but a melody composed of the three notes of a chord, played by the shepherd upon the horn of a cow, and is scarcely more than a signal of the cowherd of the Alps; hence its name, “Kuherigen” in German; “Rans des Vaches” in French. Its charms, therefore, are not in its music, but in the recollections of home and infancy. Its sounds, like those of “Erin-go-bragh,” or “Lochabar no more,” speak more strongly to the memory and to the heart than to the ear. At these accents, as by enchantment, past years, with all their joy and sorrow, rise as from the tomb, and surround like phantoms the imagination of the exile. National airs are, in this respect, most deeply affecting, and volumes upon volumes might be filled with facts gathered in the Irish and Scotch regiments, in the American and Peninsular wars, in India and elsewhere, of their wonderful effect when heard in a foreign land. Soldiers and settlers feel, according to the character of the melody, raised to the utmost excitement, or moved to the deepest dejection. “We were at a ball,” wrote a few days since a young Scotchman, from one of the islands in the Pacific Ocean; “we danced and were happy; when all at once, to please me, a Scotch tune was struck up. It seized me with such power that I was quite overcome; I could stand it no longer, and was obliged to leave the company, in order to hide my tears and my emotion.” How deeply a simple tune, heard in our youth, can strike into the recollection of the past days of our existence, is illustrated in a remarkable instance which happened in the Glasgow Lunatic Asylum, and which was told to the author by the very persons concerned in it. Some patients in the ladies’ ward met in the evening in the room of the matron. They took tea, sang, and were cheerful. A Scotch song, however, disturbed the harmony of the party; it caused such violent emotion in one of the patients that they were obliged to remove her from the company. The following day she came to see the matron, and said—“Do you know why I wept so much yesterday in hearing that song? It reminded me of some circumstances of which I had long since lost all recollection.” Gradually, in retracing step by step, occurrences and events of long-forgotten years, she came to a clear understanding and sound appreciation of her own situation, and not many weeks passed before she was restored to health and to her family.—*Dr. Mainzer’s Music and Education.*

INFLUENCE OF YOUNG MEN.—There are many persons who imagine, that so far as their conduct can affect others, for good or evil, they may imbibe such

notions as are congenial to themselves, and act from day to day irrespective of the good of others; forgetting that all belong to one common family, and that each has a claim upon his fellow-man for sympathy and aid.

Will any reasonable person pretend to deny that he has any agency in moulding the character of others, while at the same time, by his sagacity or eloquence, he makes man bow and worship at his shrine?

Is such a moral control over another, anything short of influence, and that too of the most responsible nature to the one who exerts it?

Truly, that is responsibility which makes one man answerable for the welfare and happiness of another; which all are, so far as their moral influence does, or can extend.

This being the case, it becomes all to look well to their conduct, it being the standard by which true worth is to be estimated.

Think not, young man, that it is beyond your power to send abroad such a salutary influence as shall make even the world thoughtful for your having had an existence in it.

Your friends and associates are watching your conduct with the greatest care and attention, while they mould their own characters in a great degree, by the very pattern of life, which though perhaps unconsciously, you are portraying to them in living forms.

If you are guilty of profanity, so common, I am sorry to say, at the present day, among young men, which is so low and degrading as not to emanate from the wise and good, others will become immoral by your contaminating influence, as it is most easy and natural to copy the example of the vile and depraved rather than the truly virtuous.

You are responsible for the acts of others only so far as the influence which you do, or may exert over them for their best welfare extends; for that you must ever be held accountable to man and your Maker.

But do I hear you saying, “my position in life is so humble and obscure that no one will ever look to me for direction or assistance in surmounting the various obstacles to be overcome in treading life’s rugged path.” Be not too sure of this; for your very situation may have made you an object upon which others have looked with admiration, considering you the very individual whose character would be most worthy of imitation.

Look well to your conduct, consider the mighty power of influence, as you have no moral right, if you would, to live isolated from the world; for life was not given that you might become a recluse, but that you might stand forth possessed of a character that will act upon, and benefit the race by its pure and noble principles.—*Boston Cultivator.*

FRIENDSHIP.—In young minds there is commonly a strong propensity to particular intimacies and friendships. Youth, indeed, is the season when friendships are sometimes formed, which not only continue through succeeding life, but which glow to the last with a tenderness unknown to the connexions begun in cooler years. The propensity, therefore, is not to be discouraged, though at the time, it must be regulated with much circumspection and care.

Too many of the pretended friendships of youth are mere combinations in pleasure. They are often founded on capricious likings suddenly contracted, and as suddenly dissolved. Sometimes they are the effect of interested complaisance and flattery on the one side, and of credulous fondness on the other. Such rash and dangerous connexions should be avoided, lest they afterwards load us with dishonor.

We should ever have it fixed in our memories, that by the character of those whom we choose for our friends

our own is likely to be formed, and will certainly be judged of by the world. We ought therefore to be slow and cautious in contracting intimacy: but when a virtuous friendship is once established, we must ever consider it a sacred engagement.—*Dr. Blair.*

THE HABIT OF READING.—Young men should always cultivate a habit of reading, for it may be to them not only the means of information, but the principal source of many of the finest and highest enjoyments of life. They who make good books their constant companion, will never want good and faithful friends in their prosperous days, or their seasons of reverse. There can be no blank in the lives of those persons who from active love hold daily fellowship with the wisest and best of the race. We think we could hardly be tempted to exchange our habit of reading for any other friend it may be our fortune to find on earth. And we are sure that any young man who will make this habit his friend, will ever esteem it among the wisest steps of his life; and so we counsel the young from our own experience, among all other gettings in this world, to get the habit, the love of reading—and always to have at hand a good book with which to fill up every leisure hour. In this way they come at last to know that the gems of life are found in its waste places.

Theory without practice, deos not often carry much weight in it; and on the mind of the farmer, generally speaking, it acts with less force perhaps than with most other classes in the community; for unless an array of facts, or good evidence, is adduced to inspire confidence, he is slow to change, the more so, when he knows that even a partial failure in a single crop, from experimenting, will be sensibly felt in his slender income, and perhaps for a year to come. This feeling, to a certain extent at least, is all right and proper; for experiments, to test the new theory, are best undertaken on a limited scale; *time* may be lost thereby, but *money* may be saved in the end.—*Col. CAPRON.*

ALUM.—The uses of alum are manifold and important; incorporated with paper it presents a hard smooth surface, fit for writing upon; furriers employ it in the preservation of the hairy covering of skins; it retards putrefaction in animal substances; and hardens the tallow used for candles. Its astringent properties are valuable in medicine, and its caustic properties as calcined alum in surgery. But it is in dyeing that the use of alum is most important and most widely diffused. It is rare that coloring matters present any affinity to the substances to be dyed; most of them would disappear with the first washing, were there no medium by which they could be fixed. The substance employed for this purpose is called a *mordant* or *biter-in*; and in this respect alum holds a pre-eminent rank. This mineral is also made subservient to other less praiseworthy purposes; bakers use it to give a good color to bad flour, and to swell a comparatively small lump of dough into a large loaf; iced ginger beer and lemonade, offered for sale at railway stations and other places in England, if narrowly inspected, will be found imbedded in lumps of alum, which pass very well for ice.

HOW TO WHITEN LINEN.—Fruit-stains, iron-mould, and other spots on linen, may be removed by applying to the part, previously washed clean, a weak solution of lime or of soda, oxalic acid, or salts of lemon, in warm water, and often it may be done by using a little lemon-juice. The part which contained the stain, or spot, should shortly after be thoroughly rinsed in clear, warm water (without soap), and immediately dried in the sun. Linen that has acquired a yellow or dingy color by careless washing, may be restored to its former whiteness by working it well in water to which some *strained*

solution of chloride of lime or of soda has been added, observing to well rinse it in clean water, both before and after the immersion in the bleaching liquor. Never attempt to bleach *unwashed* linen, and avoid using the liquor too strong, for in that case the fabric will be rendered rotten.

"OUR DIFFICULTIES—THEIR CAUSES."—The *Pilot* has a communicated article under the above head.—Causes assigned: the failure of the lumber trade for three seasons; the losses on produce in 1847, amounting to £250,000 by the Montreal and Quebec merchants alone; the disastrous effects of the present bankrupt law; our position as regards the balance of trade against us in England and the United States, and the want of domestic manufactures. It appears that during the year ending 1st November, 1848, the commissions in bankruptcy issued at Montreal numbered 109, of which 25 filed no statement; the remaining 84 filed statements showing total liabilities £395,729; total assets £398,329, out of which there were paid during the year dividends amounting to £9,920.

LOSS OF THE IRISH POTATO CROP.—It has been calculated that the loss sustained in Ireland by the failure of the potato crop between 1845-8, amounts to the enormous sum of *thirty-seven millions sterling*; to which must be added for the rise in the price of seed an additional sum of six millions, making a total of *forty-three millions*! In Thom's Almanac for 1848 it is stated, that 2,457,409 statute acres were under potato culture.

THE CHELTENHAM SIX-ROWED BLACK-SKINNED, OR AFRICAN BARLEY.—This is a new variety, which has been recently imported into this country from Abyssinia, and was first propagated in the neighbourhood of Cheltenham, from which place its name is derived. Since 1843, the year of its introduction, it has been grown, we are informed by several gentlemen, by way of experiment, and the result has proved it to be a hardy and prolific variety; it has been reared during severe cold and extreme drought—in the hot house, and then transplanted during frost; but such appears to be its hardihood that it was unaffected by these changes. A gentleman in the immediate vicinity of Lewes sowed last February 17 grains, which produced 383 ears, and 17,235 grains—above a thousand fold; a few of these ears are at our office, Lewes, for inspection. They present a very dark grey appearance—almost black, and the beard is extremely strong, but the grain itself breaks extremely white, and we are informed will make good pale ale. So highly are its qualities spoken of to us, that we think it desirable a perfectly fair trial should be made of its capabilities.

INOCULATING SHEEP FOR SMALL POX.—A farmer, being alarmed at the prevalence of small pox in his vicinity, was desirous of having his sheep inoculated. His shepherd remonstrated with him upon the subject, and said that the sheep at present were in a healthy and thriving condition, and that it would be very imprudent to introduce among them a disorder which might be attended with dangerous consequences, and which otherwise they might avoid. Unfortunately his master refused to listen to his advice, and the operation was immediately performed. The effect of the proceeding was that the disease raged violently amongst the flock, 95 of them died in a very short space of time, and many others are in a very perilous situation.

DRINK AND DISEASE.—It is remarkable that all the diseases caused from drinking spirituous liquors are liable to become hereditary, even to the third generation, and gradually increase, if the curse be continued, till the family becomes extinct.—*Dr. Darwin.*

Editors' Notices, &c.

To SUBSCRIBERS FOR 1848.—Those persons who are entitled to the present volume for 3s. 9d., and find it troublesome to remit the amount, may enclose a *dollar bill*, leaving it for us to pay postage. In many cases this will come within two or three-pence of the exact sum to which we are entitled.

One of the newspapers of the city having purchased a number of copies of the *Agriculturist* to present as a bonus to its pre-paid subscribers, we shall be happy to treat with any of our cotemporaries who may be desirous of doing the same.

PROVINCIAL ASSOCIATION.—We again remind the Directors of this society, that the annual meeting will take place in the city of Toronto, on the 21st instant, when a full attendance is most desirable, as business of great importance has to be transacted.

FOLDING THE AGRICULTURIST.—We recommend our subscribers, before they cut their papers, to correct the folding when necessary. A correspondent informs us, that his practice is first to spread the paper open, and damp it a little, previous to running a smoothing-iron over it, when it will become as smooth as if "hot-pressed."

W. F., Esq., Brockville.—Remittance received, with thanks for your suggestions.

Post Master, Chippewa.—Remittance—we are obliged by your friendly attention.

T. W.—Thanks for your friendly hints, most of which have been anticipated. As the season for active operations, both on the farm and in the garden approaches, we shall furnish our readers with suitable practical matter. To make our periodical of the greatest practical utility, the co-operation of experienced farmers and gardeners is earnestly invited. We want *writers* as well as *subscribers*, in order to make the *Agriculturist* what we hope it will speedily become—the accredited organ of the industrial interests of Canada.

X.—Our space will not allow giving many details of the proceedings of agricultural societies; any facts or experiments, however, that are well authenticated and possess a general interest, will at all times be thankfully received. The officers of societies may render in this way an essential service to their country.

R. L. D.—Best thanks for your good wishes. Your communication in our next.

A YOUNG FARMER.—We shall be happy to render you any assistance in our power. Your best plan would be to procure and study a good elementary treatise on Natural Philosophy and Chemistry. The small works on these subjects in Chambers's Educational Course are well suited to beginners; and Professor Draper's Text Books, published in New York, we can recommend; most Canadian booksellers could furnish them. We shall publish a series of articles on agricultural chemistry, and also, as soon as convenient, on mechanics, adapted to the comprehension of those who have paid no previous attention to these subjects. Our space, however, will not admit of giving many details or illustrations on such matters, and we earnestly advise our young readers to study some good systematic treatise. At the same time we would caution all such as are *practically* engaged in farming, against indulging in visionary expectations, and not to expect more from science in aiding practice than she has the ability to perform. Accurate analyses of soils, plants, &c., are matters wholly beyond the reach of farmers in general; they require

an intimate knowledge both of the theory and practice of chemistry, with much skill in manipulation, and demand no small share of time and patience. We shall furnish our readers hereafter, not only with the most trustworthy chemical results of modern experimentalists, but what we think of even more importance—the *agricultural* methods of determining the nature and capabilities of soils.

P. K., Thorold.—Received.—Paper sent as ordered.

W. L., Sparta.—Sent paper to your address.

H. C. M., Stamford.—Sent a copy, addressed as you direct.

S. S., near Brantford.—We have no local agent at B. Therefore your paper is sent to the P. O.

G. B. Bytown.—The 32 copies were forwarded.

Rev. H. S.—Received.—You will find some information on the subject you refer to in our "Mechanics" department.

R. H., Clinton.—The mistake of which you complain was not such as we would be likely to discover. We have many names of the same kind, and often at the same P. O., and it is impossible for us to know whether they belong to one or several persons. You should have written us long ago. As it is you shall have the paper for this year, which we hope will satisfy you. The missing numbers were sent.

E. S., Thorold.—Received.—We hope you will see fit to order the remainder of the present volume.

Post-Master, Clarenceville.—Butter's Brick Machine is now made in Buffalo. The price, we believe, is about £60.

TORONTO MARKET.

JANUARY 30, 1849.

Flour, per barrel of 196 lbs.	20	0	@	21	0
Wheat, per bushel.	3	9	@	4	3
Potatoes, per bushel.	2	6	@	3	0
Pease, per bushel, 60 lbs.	1	8	@	1	10½
Oats, per bushel, 34 lbs.	1	2	@	1	2
Bacon, per cwt.	23	6	@	30	0
Hams, per lb.	0	3½	@	0	4
Butter, in kegs, per lb.	0	5½	@	0	6
Butter, (fresh) per lb.	0	7½	@	0	9
Pork, per 100 lbs.	15	0	@	20	0
Beef, per 100 lbs.	12	0	@	16	0
Turkeys, each	2	0	@	3	0
Fowls, per couple	1	0	@	1	3
Eggs, per dozen.	0	7	@	0	9
Hay, per ton	10	0	@	65	0
Straw, per ton	25	0	@	30	0

The deliveries of wheat from the farmers continue small, and the demand limited to home consumption. Trade is dull for all kinds of produce, and the news per *Canada* will not tend to improve it. The British markets up to the latest dates, January 12th, were glutted with foreign imports—chiefly European—with downward tendency.

NEW YORK MARKET, JAN'y 29TH.

Flour.—The market rather active. The sales 3000 or 3500 barrels at \$5.56 @ 5.62½ for common and good Western, 5.87½ @ \$6 for pure. The demand is to some extent for the eastern trade; fancy extras sell at \$6.12½ @ 7.50. **Meal** continues dull; \$3 for Jersey. **Rye Flour** \$3.18 @ 3.37.

GRAIN.—For **Wheat** there is a moderate inquiry; small sales Troy Long Island at & 1.05 @ 1.18 for red, \$1.16 for white, and about 2500 bushels Western on terms not made public. The market has if anything a downward tendency for **Corn**.

PROVISIONS.—In prime **Pork** there is more activity and an advancing market. The sales are 1000 to 1200 barrels at \$12.50 for new and old, which is a large advance for old prime.

THE "BRITISH COLONIST," "PATRIOT"
AND "AGRICULTURIST."

Notwithstanding the non-political character of the *Agriculturist*, and the expressed intention of its proprietors, to abstain from the discussion of all party questions in its columns, it would seem that a newspaper of this city is determined to drag us into politics, whether we will or not, for no other purpose apparently than to gratify a selfish, revengeful feeling against another newspaper, and some personal pique against one or both of the proprietors of this journal.

In consequence of the enlargement of our paper, and the desire to have it well printed, we entered into a contract with the only publishers in this city, who had a press of sufficient size, Messrs. Rowsell & Thompson, to print it for the present year. Sometime after we had made our arrangement, these gentlemen became also the publishers of the *Patriot*, and, among other things, to advance the interests of their paper, agreed to purchase from us as many copies of the *Agriculturist*, as would be needed to give one to each of their subscribers who should pay in advance. The *Patriot*, as most persons are aware, is a conservative paper; but, as the *Agriculturist* professed to have the promotion of agriculture, and the advancement of science, for its objects, and disclaimed any intention to engage in political discussion, the publishers of the *Patriot* felt no reluctance in sending our journal to their subscribers. The *British Colonist*, however, a paper at present professing to hold conservative opinions, in the course of a dispute with the *Patriot*, in which we had no concern, made the discovery, that the *Agriculturist* was a paper of the most "radical complexion," and had "always displayed the rabid qualities of its temper, particularly at the last general election"! We feel sure our readers will not be less surprised at this discovery than ourselves. The charge is as devoid of truth, as the editor of the *Colonist* has since shewn himself devoid of honourable feeling, and therefore of fitness to conduct a public journal. As soon as we read the wanton and malicious attack of the *Colonist*, the writer of these remarks, believing that he was the individual aimed at (Mr. Buckland having had no concern in any publication in this country till within a few weeks) felt bound to answer it, through the channel in which it had been conveyed to the public, and accordingly addressed the following letter to the *Colonist*. Any other newspaper in the province would have inserted the letter, in conformity with a just and universally recognized rule, to allow those who have been attacked in their columns to be heard, through the same channel, in explanation or defence. But the *Colonist* is a singular exception, and, with his usual fairness, the editor not only refused to insert our reply, that his readers might judge in the premises, but reiterates the attack with more virulence than before, and quotes a portion of a sentence from our letter to prove that we "admit" the charge, while that very sentence taken as a whole, is an express denial of it. Again, he quotes a portion of the sentence which speaks of the "difficulty of sustaining an agricultural publication," and twists it into an intimation by us, that we intend to take up politics in our paper, in order to lessen that difficulty! Against such unfounded attacks, such shameful disregard of the courtesies of the press, and such despicable tricks of argument, it is impossible to contend. We should have taken no further notice of the matter, had the *Colonist* permitted his readers to see our defence; but as some of our political cotemporaries at a distance may be deceived as to the character and objects of the *Agriculturist*, by these misrepresentations, we have occupied our outside sheet with such observations as seemed necessary. As to our readers, they can safely dispense with the *Colonist's* sagacity in smelling out the "radicalism" or "high toryism" of the *Agriculturist*.

Whenever they find either of these *isms* in the paper, they will probably let us know of their disapprobation "in the usual way." Up to the present time, among nearly six thousand subscribers, of all shades of politics, scattered over British America, from Sandwich to Prince Edward's Island, we have not heard a single complaint on this score. And we believe, had not the *Colonist* got into a squabble with the *Patriot*, and, under the influence of jealousy and spiteful feelings against the latter journal, become reckless of truth and decency in the ejection of his spleen, we should not have heard the charge now.

To the Editor of the "British Colonist."

SIR:—In your paper of the 13th inst. you have thought proper to publish an unprovoked, and most unjustifiable libel against the *Agriculturist*, a cotemporary journal whose character and avowed objects ought to have shielded it from newspaper attack, especially if prompted by no higher incentive than the satisfaction of making a fling at a third party.

You assert, speaking of your rival the *Patriot*, "He professes to advocate the most ultra tory principles, while he embraces and incorporates the sentiments of the *Agriculturist*, a publication of the most Radical complexion, and which has always displayed the radical qualities of its temper, but more particularly at the last general election, when it shone conspicuously as a Radical Organ."

I beg to assure you, Sir, that you have been misinformed as to the character of the *Agriculturist*, and that your remarks, so far as they relate to that journal, are unwarranted and untrue. The *Agriculturist* was not in existence at the last general election, and could not therefore have "shone" in any character. The *Agriculturist* has not identified itself with any political party, nor advocated opinions that belonged to one party more than another. The *Agriculturist* and *Canadian Journal*, the first number of which was issued in the latter part of January, 1848, no longer exists; with that paper the writer was connected, and during the year it contained occasional observations on two or three questions of great public importance, viz., the Banks, the Usury Laws, the Navigation Laws, &c., which may in one sense be called political questions; but they belong to no party as such, and were not discussed in either a "Radical" or "Tory" spirit. But, sir, while I deny that there is a single line to be found in that paper, that would warrant the remarks you have made, I must inform you that the *Agriculturist*, whose "sentiments" you taunt the *Patriot* with "embracing," to the great peril of its reputation as a tory journal, is exclusively devoted to Agriculture and Science; is a new publication in form, character, and proprietary, the first number being all that has yet appeared; has no connection direct or indirect with any other paper, and neither has had, nor will have, ought to say on matters purely political, or which serve to distinguish one political party from another.

The principal editor, Mr. George Buckland, is comparatively a stranger in Canada, and has not so far as I am aware, formed or expressed any opinion upon the politics of the country. The *Patriot* of the 18th inst., I perceive, states the belief, that his opinions are "Conservative," but, though I have known him very intimately for nearly two years, I could not have expressed that belief with confidence, so little interest has he taken in our politics, and so seldom have I heard him speak on such topics. I trust, therefore, you will see and acknowledge the mistake you have made in charging the *Agriculturist* with disseminating "Radical," or any other political opinions, and the injustice you have done to Mr. Buckland, a stranger among us, whose past life has been spent in the quiet pursuits of agriculture, and who has come here with the intention of spending the remainder of it in the effort to improve and elevate that most important art in Canada.

The difficulty of sustaining a respectable publication, confined to the discussion of agricultural subjects, and to the diffusion of sound information and advice, suited to the wants of the rural classes, is sufficiently great in this new country, without the unsought and unmerited opposition of political journalists.

For myself, though jointly interested with Mr. Buckland in the "*Agriculturist*," I ask no immunity on the score of my political opinions. I deny that either the present paper or its predecessor, with which I was connected, has been made the vehicle for promulgating them. And I am yet to learn, that a man must cease to be either radical or tory, in order to be an agriculturist, or to conduct an agricultural journal. I pity the man, who, in a country like ours, has no political opinions, after he has had time to form them, and is called upon to act; and I despise him, who, having made up his mind, is deterred from acting through fear or subserviency, or who can change his politics as he would his coat, to suit the state of the atmosphere. Born in Canada, and holding such doctrine, you may be assured, sir, I have formed opinions upon the politics of my native country, and when called upon will never hesitate to avow them. And I admit for the information of all who desire it, that you would be perfectly right in setting down my opinions in your present vocabulary as "Radical," but at the same time I contend, supported I am sure by the candid of all parties, that in speaking of the *Agriculturist*, you have no right to drag in the private opinions, political or religious, of either of its proprietors, unless you point them out in the work itself. It would be just as fair in us to tell our twenty or thirty thousand readers, that the very useful Almanac you lately issued, is "a publication" of the most changeful and deceptive "complexion," and thus to excite public distrust in the integrity of its statistics, because your politics, sir, are said not to be of the most certain, or reliable character.

I ask you, sir, as an act of editorial courtesy, as an act of justice to Mr. Buckland, as an act of justice to the agricultural interests of the country, which must suffer from any cause that would lessen the circulation or destroy the efficiency of the agricultural press, to insert these remarks in your next number, and either to substantiate or retract the charges you have made against the *Agriculturist*.

I herewith send you a copy of that paper containing the article which the *Patriot* "embraced and incorporated," and would feel obliged by your pointing out the "sentiments" to which you object.

I am, Sir, your very humble servant,
Jan. 20th, 1849. WM. McDUGALL.

We think it also desirable to place before our readers the following letter of Mr. Buckland, as published in the *Toronto Patriot* of Jan. 22, that they may see and judge for themselves, respecting the principles of the conductors of the *Canadian Agriculturist*.

To the Editor of the *Patriot* :

Sir—Little did I imagine, that within the short space of a fortnight after commencing my duties as the principal editor of "*The Canadian Agriculturist*," I should find myself somewhat unpleasantly involved in party politics. The *British Colonist* has most unwarrantably designated the periodical with which I am connected, as a violent radical print, and accuses you of gross inconsistency for inserting, in your favourable notice of the publication, its introductory article, which was written by myself. As my partner has written to the *Colonist*, to correct his misstatement, and you, in your yesterday's publication, have said, perhaps, all that is really necessary, in reply to so unprovoked an attack, I had resolved on remaining wholly silent; but, upon second thoughts, it occurred to me, that, as you have expressed an opinion that I am *conservative* in my sentiments, therefore not, as the *Colonist* would insinuate, a *radical*,

a few words on my part may not appear uncalled for. I must protest, however, against the way in which I have been thus publicly associated, both without my knowledge, and certainly against my inclination, with party politics. Nothing I have said or written, either since or prior to my arrival in this country, would justify such a proceeding. I never have been mixed up with political parties and squabbles, and, from the little I have learned of the state of such matters here, I sincerely trust I never may. I came out to Canada for a very different object; and, if the *Agricultural* paper with which I have connected myself cannot be sustained on strictly *neutral* grounds, so far as I am concerned, it shall fall.

I hope, Mr. Editor, if I continue in this country, to employ my humble talents in promoting peace and good will, in the diffusion of useful knowledge, the improvement of agriculture, the advancement of the social and moral condition of the people, and of those great principles of our common Christianity, which all good men both believe and practise. All prejudices of race, party and creed, should, as far as possible, be merged into the generous love of our adopted country. If our politics were thoroughly imbued with this spirit, how many causes of social bitterness and individual heart-burning would be removed!

If I am not trespassing too much upon your space, will you make room for the following extract from the conclusion of a speech, which I delivered at a large agricultural dinner in my own neighbourhood, only a few days before I left England, in the spring of 1847; my highly esteemed friend, Mr. Law Hodges, M.P. for the county of Kent, was in the chair. The report is from the *Maidstone Journal*.

"In leaving my native country, I rejoice to know, that I shall not resign either the rights or duties of a citizen, by ceasing to become a British subject. For, after all, what are our colonies; what, for instance, is Canada, but a great outlying county of Old England, an integral portion of our great and glorious Empire. I shall endeavour to realize and cherish the patriotic sentiment of the poet:

"Far as the breeze can bear the billow's foam,
Survey our Empire, and behold our Home."

"And now my friends, in saying to you farewell, pardon me if I manifest a more serious tone than is usual on these convivial occasions. In a few days I and mine will be on our way upon the great deep, in the bark that is to carry us to our distant home; I again assure you, that I have resolved on this important step, not because I am dissatisfied with my country, or have failed to receive the sympathy and encouragement which I think I may have deserved. I shall always look back with pleasure on past scenes and connexions, and the little I have been enabled to do for the improvement of our common pursuits. I feel an undiminished attachment to my native land; I love her institutions, her religion, and her laws; and hope wherever my lot may be cast, that I shall never forfeit the good wishes and opinions you have so kindly expressed. In commending you, and mine, and all our interests, to the care and keeping of a gracious Providence, I now bid you farewell."

These were the sentiments with which I left my native country, and I am not ashamed to say that they are my sentiments still. Whatever may be the political complexion they may be supposed to assume here, I care but little, only I must protest in my present blissful state of ignorance of the many ins and outs of colonial politics, against the supposition of wearing the livery of any party.

It is not, I assure you, very pleasant to my feelings to be thus compelled to say so much about myself; circumstances not of my choosing must plead my excuse.

I am, sir, yours, most respectfully,
Toronto, Jan. 19, 1849. GEO. BUCKLAND.

CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. 5, ix.

GEORGE BUCKLAND, }
WILLIAM McDOUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, MARCH 1, 1849.

No. 3.

TO READERS AND SUBSCRIBERS.

This number of the *Agriculturist* completes the three of this volume, which we promised to send to all our last year's subscribers, whose subscriptions were paid up. But as several agents have neglected to send proper lists of the *paid* and *un-paid* subscribers (and indeed have neglected to send us anything but the *names*), we have not been able to make the distinction we had intended, and have therefore sent the first three numbers of the present volume to *all* subscribers for 1848. Some of these subscribers commenced with the latter part of the volume of the *Canada Farmer* for 1847, and have consequently got a much greater quantity of matter than was promised them. We hope those who have not yet paid will forward the *dollar* as soon as possible. There is still a considerable debt due for the printing of the *Farmer* as well as for the *Agriculturist* for 1848, which falls upon the shoulders of one of the present proprietors, and unless the amount due him from agents and subscribers is realized, he will sustain a much heavier loss than was anticipated, or than he is very well able to bear. Two or three societies have also neglected to pay us; we hope they will not require a *special* invitation. Apart from the justice of the matter, we trust every person who has read the paper will feel a sufficient interest in its success to "pay the printer."

☞ *Money* enclosed in a letter, and addressed to the "Editors of the *Agriculturist*, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, need not wait to be called upon.

☞ *Payment in advance* being the only system that will answer for a publication so cheap as ours, we shall

send the remainder of the volume to none but those who *order* and *pay* for it.

☞ *Subscribers* who desire to continue the work, will do well to send their orders without delay, for, as we do not mean to print a large edition with the view of having a surplus, we cannot promise that at the end of two or three months we shall have any back numbers on hand.

TRAVELLING AGENTS.—MR. T. M. MUNN is our Travelling Agent for the Eastern section of the Province; MR. PALMER, for the Northern; and we hope soon to announce one for the Western.

LOCAL AGENTS.—Any person may act as a local agent. We hope that all those who have heretofore acted as such, will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending *four* subscriptions. Those sending *twelve* and upwards will be supplied at 3s. 9d. per copy.

THE CANADIAN AGRICULTURIST,

A MONTHLY JOURNAL OF AGRICULTURE, HORTICULTURE, MECHANICAL AND GENERAL SCIENCE, DOMESTIC ECONOMY AND MISCELLANEOUS INTELLIGENCE; Published by the Proprietors, W. McDougall and GEO. BUCKLAND, on the first of each month, at their Office, near the South-West corner of King and Yonge Streets, Toronto.

☞ Subscription, *One Dollar in advance*. Advertisements 4d. per line each insertion.

☞ Societies, Clubs, or local Agents ordering 12 copies and upwards, will be supplied at 3s. 9d. per copy.

SEED WHEAT.

A QUANTITY of very superior CAPE SPRING WHEAT, grown by CAPTAIN SHAW, Oak Hill, Toronto, for sale by the Subscriber, at 7s. 6d. per Bushel.

JAMES FLEMING,
Seedsman, Yonge Street.
3-2in.

Toronto, Feb. 28, 1849.

PHENIX FOUNDRY,

No. 58 YONGE STREET, TORONTO.

GEORGE B. SPENCER,

(LATE C. ELLIOT.)

CONTINUES every Branch in the above Establishment, as heretofore; and in addition, keeps constantly on hand a good assortment of COOKING, PARLOR, BOX and AIR-TIGHT STOVES, of the most approved patterns.

Also, a SECOND-HAND ENGINE, with or without the Boiler, 12-horse Power, will be sold very cheap for Cash or short payment.

Toronto, Jan. 26, 1849.

1-tf

MAMMOTH HOUSE.

New Dry Goods & General Outfitting Establishment,

Opposite the Market, King Street East, Toronto.

THOMAS THOMPSON respectfully solicits the attention of his numerous friends throughout the country to his large and well-assorted Stock of

STAPLE AND FANCY DRY GOODS,

particularly adapted for the Country Trade, consisting of Woollen Cloths, Blankets, Flannels, Sheetting, Hosiery, Prints, Cloaks, Bonnets, Factory Cottons, Cotton Warp, &c., with an immense Stock of Hats, Caps, Furs, &c.; together with a large and general assortment of

READY-MADE CLOTHING,

suitable for the Season, and manufactured on the premises; also, a well-assorted stock of Ladies', Gentlemen's and Children's BOOTS and SHOES, of every description, and at unusually low prices; the whole of which, with the Clothing, will be made by the best of workmen, under the direction of experienced foremen, and will be sold at unprecedented low prices.

Farmers and Mechanics, call and try the "Mammoth House," opposite the Market.

January, 1849.

MESSRS. DENISON & DEWSON,

ATTORNEYS, &c.

New Market Buildings, Toronto.

January 26, 1849.

2

SEVERN'S BOTTLED ALE.

THE Subscriber, having resumed his former business in a convenient locality, with a large stock on hand, of a superior quality, and in prime condition, would hope to secure a continuance of the patronage and support hitherto conferred upon him.

J. D. BARNES,

6, Wellington Buildings,

Adjoining Mr. Sterling's, King-st.

Toronto, January, 1849

1

CASH PAID FOR WOOL.

G. MONRO, King Street East, Toronto, still continues to pay the highest price for Fleece and Pulled Wool.

Toronto, January, 1849.

1-6m

REVOLVING WOODEN AND COIL-TOOTH HORSE RAKES.—The Subscriber has received a large assortment of Horse Rakes, which will be sold at his Establishment, either for Cash or approved Notes.

G. MONRO.

Toronto, January, 1849.

1

GARDEN AND AGRICULTURAL SEEDS.

THE Subscriber begs to inform his friends, and the public in general, that his stock of Fresh Garden and Agricultural Seeds for the spring sowing is now complete. The Subscriber's long and practical acquaintance with his business enables him to select only such kinds of seeds as are most suitable for this climate. The vitality of each sort is fully tested before offered to the public; new varieties and such as are raised in greater perfection in Europe, are annually imported from sources that can be relied on.

Country merchants, and others, wishing seeds to sell again, can be supplied on the most moderate terms.

JAMES FLEMING,

Seedsman and Florist, Yonge Street.

Toronto, Jan. 1, 1849.

1

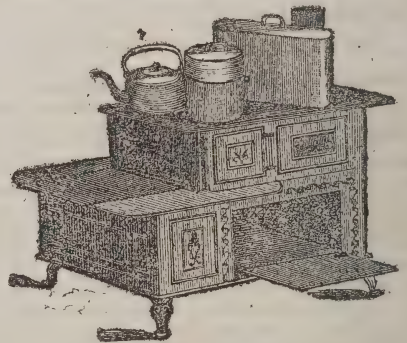
AMERICAN SCYTHES, FORKS AND HOES.—

A very large assortment of the above articles for sale, wholesale and retail, by the Subscriber.

G. MONRO.

January, 1849.

1-2m



STOVES! STOVES!! STOVES!!!

J. R. ARMSTRONG,

CITY FOUNDRY,

No. 116 YONGE STREET, TORONTO,

HAS constantly on hand, COOKING, BOX, PARLOR, and COAL STOVES, of various patterns and sizes, very cheap for Cash.

Also, a New Pattern HOT-AIR COOKING STOVE, just received, taking three-feet wood, better adapted for the country than the Barr or any other Stove now in use. It has taken the First Premium at every fair in the United States, where it has been exhibited.

Ploughs, Sugar Kettles, Grist and Saw Mill Castings, Steam Engines, Sleigh Shoes, Dog Irons, and a general assortment of Castings.

Toronto, Jan. 26, 1849.

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THE
CANADIAN AGRICULTURIST.

Vol. I.

TORONTO, MARCH 1, 1849.

No. 3.

ON THE SELECTION OF SEEDS.

The season for spring operations being close at hand, we beg to call the attention of our readers to the importance of a judicious selection of seeds, and the value of root crops.

Much injury is sustained by the farmer, from sowing, year after year, seed grown by himself, or that raised in his neighbourhood from a similar soil. In selecting seed, care should be taken to procure it from a suitable soil and climate, and of a variety adapted to the new condition, in which it is intended to be placed. A change from one kind of soil to another, has generally been found advantageous in all parts of the world; but as regards climate, there appear to be numerous exceptions, even within comparatively limited areas of country. Thus it was found many years ago, that some varieties of oats, cultivated in Scotland with great success, were not at all suited to the drier and warmer climate of the south of England—the seed not properly filling in the ear, and frequently shrivelling up after blossoming. Several of the finer varieties of white wheat, cultivated in the south-eastern counties of England, have been found, after repeated experiments, to be very unsuited to the more humid climate of the western counties, and of Ireland. The same thing may be observed throughout the temperate regions of North America, particularly in Indian corn. How widely different the gigantic varieties that are so successfully cultivated in the south-western States, to the hardier and dwarfish kinds that can be made to yield only a comparatively small return in most parts of Canada. The pea may be adduced as another striking instance—no crop requiring more attention in adapting the variety to soil and climate. There is no portion of this continent, perhaps, so well suited to the pea crop as Canada. It is here much less subject to the depredation of insects than in the neighbouring States; but even here the maggot appears to be increasing every year—a fact which clearly points out the necessity of a strict attention being paid to a proper selection of seed, and a different course of rotation.

In this country, clover and timothy constitute the principal and most nutritious food for cattle,

during our severe and protracted winters. The clover crop might be very much augmented in bulk, as well as improved in quality, by sowing a more liberal quantity of good seed, with a moderate dressing of manure. The great benefit of applying gypsum (plaster) on all the lighter kinds of soils, is too well known to require any urgent recommendation. Every farmer, before sowing clover or any other small seeds, should test their vitality, which is easily done by placing a small quantity of seed in a pan of moistened earth, and exposing it to a gentle heat. It is too much the practice with dealers in the smaller seeds, to mix the old and fermented with the new—a thing which can only be ascertained by careful inspection and experiment. It is far cheaper to pay a high price for good seed, than to get what is indifferent for nothing. In this department of farming, as well as in many others, a liberal outlay at first will bring the greatest profit at last.

Increased attention to the cultivation of root crops, we regard as essential to the improvement of Canadian agriculture. The old Flemish adage holds good all over the world—"Without forage, no cattle; without cattle, no manure; without manure, no corn." Hence the importance of a proper selection of seeds, both as to quality and variety. The seed of turnips, mangel-wurzel, carrots, &c., should be saved only from sound, well-shaped, vigorous roots, that are perfectly free from mixture or impregnation with other varieties.

It is astonishing how the nutritive qualities of roots vary according to the purity of the sorts cultivated, and the nature of the soil on which they grow. Several years since, an improvement was effected in Scotland in a single variety of the Swedish turnip, by a judicious selection of the roots from which the seed was saved, that enhanced its value, it was calculated, upwards of 300 per cent! Now there can be no doubt that in Canada all kinds of agricultural produce might be increased in quantity as well as improved in quality, by paying more attention to these matters. And this might be done without any additional outlay of capital worth mentioning, by a little pains taken in selecting pure and suitable kinds of seed.

As a proof of the facility with which improved and genuine seed may be procured and propagated

we will instance the experience of Mr. Shirreff, an eminent Scotch agriculturist. "In the spring of 1823 a vigorous wheat-plant, near the centre of a field, was marked out, which produced 63 ears, that yielded 2473 grains. These were dibbled in the autumn of the same year; the produce of the second and third seasons sown broad-cast in the ordinary way, and the fourth harvest put me in possession of nearly forty quarters (320 bushels) of sound grain!—In the spring of this year I planted a fine purple-top Swedish turnip, that yielded (exclusively of the seeds picked by birds, and those lost in thrashing and cleaning the produce,) 100,296 grains, a number capable of furnishing plants for five imperial acres. One-tenth of an acre was sown with the produce, in the end of July, for a seed crop, part of which it is in contemplation to sow for the same purpose in July, 1829. In short, if the produce of the turnip in question had been carefully cultivated to the utmost extent, the third year's produce of seed would have more than supplied the demand of Great Britain for a season!"

The importance of attending to the purity of seed, and the cultivation of suitable varieties, can scarcely be overrated. Farmers should habituate themselves to careful observation on the progress and appearance of their growing crops, and mark whatever peculiarity may arrest their attention. If, in a field of wheat, a single plant only should be found, having a larger ear, more compactly filled with grain of a superior description to the rest, this circumstance, trifling as it may appear, ought by no means to be neglected, since, by a little attention and pains taking, a new and valuable variety might be obtained. Cultivation and selection have completely changed the original character of many of our cereals, roots and fruits. Who would have supposed that the wild cabbage growing on the sea-coast could have been converted into a cauliflower,—the small wiry roots of the wild carrot into the large, succulent ones of the garden; or that the many sweet and delicious varieties of apples could have been originated from the sour crab of the woods?

There are several plants but little, if at all, cultivated in this country, that might probably be introduced to great advantage. It is the first duty of every civilized community to turn the natural advantages, with which Providence has blessed them, to some practical account; or, in other words, to raise from their own soil whatever that soil, by the aid of man's art and industry, is capable of producing. Among these desiderata might be enumerated hemp, flax, rape, mustard, lucerne—all of which the soil and climate of Canada would produce in abundance, by properly attending to their culture. As it is, we import largely most of these and other productions, which we ought to raise for ourselves. To purchase from abroad

what we can as cheaply produce at home, is an infallible way of keeping the country stationary and poor. We were told the other day, that in Toronto alone, there are upwards of a hundred bushels of canary seed sold annually. Now what should hinder this production from being raised on our own soil? This seed is worth from three to four dollars a bushel, and its culture is deserving of a fair trial on a small scale.

These considerations open up a wider field than we have now either time or space to occupy. Suffice it to say, that if proper attention were generally paid to the breeding and management of live stock, the cultivation of the best kinds of grain and root crops, and other productions adapted to our soil and climate, with the saving and economical application of manure, the real wealth of the country would be incredibly increased. These considerations are worthy the grave attention of the Legislature and Agricultural Societies.

In our next we propose giving some practical information on the cultivation of root crops, and upon plants but little known in this country. In the meantime, if any of our readers in this district should be desirous of selecting their seeds, we can confidently recommend them to Mr. Fleming, of the Yonge Street Nursery, in this city, whose diversified stock of imported and native seeds we have had an opportunity of inspecting.

ON THE APPLICATION OF SCIENCE TO AGRICULTURE.

NO. III.

Before we enter directly on the subject of Agricultural Chemistry, it may be desirable just to glance at a few of the principal facts and doctrines of chemical science. This will enable those of our readers, who have paid no particular attention to the subject—and it is for such these articles are chiefly designed—to form some general idea of the nature and objects of this extensive and interesting science.

All material objects with which we are acquainted, whether they exist as solids, liquids, or gases, may be separated into two grand divisions; that is, they are either *compound* or *elementary* substances. By an elementary substance is meant a body containing only one kind of matter, or consisting of only one kind of particles, admitting of no decomposition, whatever force or test may be applied. Thus sulphur, iron, copper, the pure metals, and several of the gases, are elements; that is, do what we may with them, either by mechanical or chemical means, nothing different from sulphur, iron, &c. can be obtained from them. In the present state of knowledge there are nearly sixty substances existing in nature that are considered elementary: although there are not more than a

dozen, or at most a score of these elements, which need to be particularly considered by the farmer; and of these we shall speak more in detail hereafter. Earth, air, fire and water, were by ancient writers called elements. It is not certain in what precise sense they used the term; but none of these substances are elements in the sense above explained. They are all *compounds*; that is, they are made up of two or more elementary bodies. The composition of earth is very various, consisting of salts, organic matter and metallic bases. Air is a mechanical mixture, consisting chiefly of two elements, in a gaseous form, oxygen and nitrogen; while water is the result of a chemical combination between oxygen and another gas, termed hydrogen. It is therefore evident that soils, plants, animals; all substances, in fact, with which the farmer has to do, are *compound* bodies.

Now chemistry explains the *laws* by which two or more elementary substances unite to form a *compound*, which is a substance different in its nature from any of the elements of which it is composed. Simple or elementary bodies do not combine with one another at random, but always in certain proportions; thus demonstrating the wisdom and goodness of the great Author of nature. The tendency which bodies have to unite with each other is called *affinity*, or *chemical attraction*—a force very unequal in different substances. In obedience to the laws of chemical affinity and definite proportions, among the elementary particles of matter, is to be traced much of the beauty and endless variety of the material world!

As a familiar illustration of *combination*, take spirit and water, which readily unite on being mixed, forming one homogeneous liquid. Sugar and salt also combine with water. A small piece of iron hoop immersed in diluted sulphuric acid, causes an intense chemical action to ensue; the iron disappears—its particles, uniting with those of acid and oxygen, forming a greenish liquid—the hydrogen (the other element of the water) being disengaged in the form of gas. As an instance of *decomposition*, take a piece of limestone and expose it to the heat of a furnace, *carbonic acid gas*—an invisible air, consisting of two elements (carbon and oxygen)—will be driven off, and *quick-lime*—a compound of oxygen and calcium—will remain.

The decomposition of a body consists in the separation of its elements, either by the action of heat and the other imponderable agents, or the application of chemical tests, for which the elements of the compound have a stronger affinity than for each other. This process is denominated *analysis*, or the separating of a compound into its original constituents. The reconstruction of the compound, by causing its separated elements to combine again, is termed *synthesis*; that is, putting

together. These two processes comprehend the whole of inorganic chemistry.

Hitherto, we have considered matter as subjected merely to the laws of chemical action; but this arrangement would exclude many of the most interesting objects of the farmer's care and investigation. His pursuits lead him beyond the mere inert soil which he tills, or the manures he may apply, to the consideration of living beings possessing higher and more complicated forms, and under the control of a distinct system of laws. These bring us at once within the dominion of *life*, and present us with totally distinct classes of matter. A stone, or a piece of earth, possesses no apparatus or organs for supporting its existence or increasing its bulk; it is a dead, inert mass, and it is hence denominated an *inorganic* substance. A plant or an animal is likewise matter, but differing most widely from the stone in possessing a regular organisation, by which it can assimilate food for building up its own structure, and is endowed with the power of reproducing its own species. Plants and animals, therefore, are denominated *organic* beings, endowed with the principle of life.

"Of the laws which produce the condition to which we apply the term Life, we know nothing but from certain phenomena which the living body presents. The essential cause is amongst those ultimate truths which human reason cannot reach. No approach has been made to solve the mystery of Life; and at this hour we are as ignorant of the cause of life, and of the agency which connects the powers of mind and the mechanism of the body, as at the first dawning of human inquiry."

Although the organic and inorganic departments of nature admit of a very clear distinction, yet there exists between them an intimate and beautiful connection. For instance, the plant is enabled by its peculiar organization, to extract its food from the dead earth and surrounding atmosphere: from these two sources alone it derives the materials which it works up, under the influence of the vital force, into its own structure. The animal is immediately dependent upon the plant for the means of its support, not having, like the plant, the power of obtaining nourishment directly from the mineral. We can here perceive a few links in that great chain of mutual dependance which harmoniously binds together the multitudinous works of the Creator.

The properties imparted to organic bodies by the agency of life, are of a most singularly striking kind. For example, as soon as the vital principle becomes extinct, the body is placed under the laws of common matter, and decomposition, which subverts the union of its particles, at once commences. It is therefore the possession of the vital force only that enables the animal or plant to control the naturally powerful agents of decomposition by

which it is constantly surrounded. One of the principal of these agents is heat; and it may be interesting to state a few instances as illustrations. Animals, when alive, have the power of resisting a degree of heat which in a dead state would absolutely roast them. Some French philosophers, a number of years ago, placed themselves in an oven, heated to the ordinary degree for baking bread, for a sufficient time to enable the roasting of a joint of meat to commence, without suffering any fatal consequence. Persons frequently labour in factories, mines, and within the torrid zone in the open air, under a degree of heat far exceeding the natural temperature of the blood, without having that temperature sensibly affected; and this is done even without any seeming injury to health, or any other inconvenience than a continued and copious perspiration.

On the other hand, we find that the vital power of animals enables them to endure excessive cold, without materially injuring their health. Whenever the temperature of the air falls below the freezing point, and water and several other fluids are converted into solids, the blood of living bodies does not cease to flow, the animal fluids being removed beyond the ordinary laws of matter by the hidden agency of life. Arctic travellers have proved that in a temperature below the freezing point of mercury, animal heat suffers no sensible diminution, and human beings can perform their accustomed duties. So exceedingly tenacious is the vital principle in some of the lower kinds of animals—such as fish, for instance—that a large portion of their fluids may be actually frozen, and yet their activity may afterwards be restored by the application of warmth. There are, however, many animals to which an excessively low temperature is wholly unsuited, and even destructive. Nature, in such instances, provides an efficient remedy. In cold latitudes, all such animals either migrate or hibernate during the rigours of winter. In the latter case, the torpor of the creature may be likened unto death, yet the circulation does not wholly cease—the vital principle is dormant, not extinct, since the genial temperature of returning spring awakens those sleepers to renewed activity and their wonted enjoyments.

There is a substance secreted in the stomach of the living animal, possessing a prodigious solvent power—the gastric juice. This fluid readily dissolves meat and all kinds of food, yet it never acts upon the living organs with which it comes in contact—so powerfully does the vital force resist the strongest agents of decomposition. Even the vegetable kingdom is not an exception. The hardy trees of our forests resist the intensest cold of our Canadian winters, without having, under ordinary circumstances, their vitality affected. The astonishing vitality of some kinds of seeds is a fact well known. Seeds buried in the earth for count-

less ages, and placed beyond the reach of light and air, have preserved unimpaired the vital principle; for no sooner are they disinterred, and exposed to the influences of air and moisture, than vegetation at once commences.

“Death, as well as life, is a law of nature; and life, with all its powers, is but the gift of a season. The organized fabric, so marvellously formed, contains within itself the germs of decay. The circulating fluids become more thick, the texture more rigid, and the vital organs less fitted to perform their functions. The balance is lost between the waste of the system and the means of supplying its parts with nourishment; and thus, independently of all external injury, the time arrives when the mechanism of the body can no longer work with the vigour required to maintain the animal functions.” The body, when deprived of the vital force, becomes at once subjected to those chemical agents by which it had been constantly surrounded, and which are now enabled to effect its entire decomposition. This marvellous change sooner or later awaits every living thing. Man himself, having been originally formed out of the dust of the ground, when the Creator “breathed into him the breath of life,” yields up at last his spirit to Him who gave it, and mingles his ashes with common earth!

We have extended these remarks beyond what we intended at the outset. If, however, any of our readers should be induced thereby to regard with a higher interest the works and laws of an omnipotent Creator, and thus bring their minds more in harmony with His will, our seeming digression will not have been without its use. The future papers in this series will embrace, 1st, the Composition of Soils, with their improvement and management; 2nd, the Composition of Plants and Animals; 3rd, the Composition of Manures.

ON THE DOMESTICATED ANIMALS OF THE FARM.

NO. II.

The question as to the origin of species, and the progressive development of organic life on the surface of our planet, is one by far too extensive and complicated for us to discuss within our necessarily restricted limits. Nor indeed is it at all necessary that we should, so far as any really useful or practical purpose is concerned. It would appear from the fossil remains, both of plants and animals, imbedded in the various rock formations of the earth's crust, that a most astonishing series of changes has been going on since the original creation of the world, not only in reference to the distribution of heat, land, and water, but also of vegetable and animal tribes that have been successively called into existence. Not only have species, but entire genera of organic beings ceased to exist,

and new forms created adapted to the altered physical conditions of the earth. That these conditions have been very various, and not absolutely stationary for any considerable periods of time, it is impossible to doubt. And that animals suited to these varying conditions should be called into being by creative power, is a principle perfectly reasonable and consonant with our highest conceptions of the divine perfections. The natural history of the earth reveals a constant series of alternate decay and renovation—of destruction and reproduction, not taking place by chance, but in obedience to law, and that law being the mode in which the power and wisdom of the Creator have been manifested.

However the origin and distribution of species may be accounted for, a subject that would lead us into a wide field of speculation, there is, as Professor Low observes, “a class of changes in organic forms which fall more within our cognizance, and which merit our attention in an especial degree; this is the class of changes which produce what are called *Varieties* or *Races*.” Man, as well as the lower tribes of animals, is subject to the influences of temperature, food, habits and other agencies that tend greatly to modify his form, colour and general condition. And notwithstanding the many and great differences observable among the various tribes of the human race, there is no sufficient reason to conclude against their having descended from a common parent, and dispersed abroad in the earth from one centre. They form in fact but one species, possessing certain characters in common, and endowed with the power belonging to all other species, that of perpetuating their race.

It has been already stated that different circumstances, such as climate, the physical conformation of a country, the means of obtaining food, temperature, &c., produce very great changes on the forms and habits of animals of the same species. But it is in the domesticated state more particularly that these differences are fully brought out. “The wild hog of the forest, which extends over the greater part of the old continent, is the undoubted progenitor of the common domesticated breeds. When this powerful and solitary creature is subjected to domestication, we find not only his form, but all his habits change. He may be said in fact, to become a new species; and he transmits all his acquired characters to his descendants.” In fact, what are considered the most permanent conformations, by which not only species but even genera are distinguished, undergo changes according to the varying physical conditions in which he is placed. The wild hog has six incisor teeth in each jaw, but the effect of domestication is usually to reduce that number one half. Other portions of the body, as the vertebrae, undergo corresponding changes, so that he differs as much, and in

some respects even more from the wild hog of the forest, from which he originally descended, than do many animals, regarded as distinct species, differ from one another.

The ox and the sheep, among ruminating animals, are to the farmer the most valuable and important, and they are subject to changes in habits, form and constitution, by the kind and quantity of food with which they are supplied, and the physical conditions in which they are placed. “With increased supplies of food (observes Professor Low), the abdominal viscera become enlarged, and other parts partake of corresponding modifications of form. To suit the increased size of the stomach and intestinal canal, the trunk becomes larger in all its dimensions; the respiratory organs adapt themselves to the increased dimensions of the alimentary canal, which is indicated to the eye by a change in the form of the chest; the limbs become shorter and farther apart, and the body being nearer the ground, the neck becomes more short; various muscles, from disuse, diminish in size, and the tendency to obesity increases. With the form of the animals, their power of active motion diminishes, and they acquire habits adapted to their changed condition. These new characters they communicate to their progeny; and thus races differing from those which, in the state of nature, would exist, are produced.”

The same holds good with regard to birds, several of which, when subjected to domestication, change not only their form and habits, but in a considerable degree their original instincts. The wild goose inhabits the low marshy situations of high northern latitudes, and on the approach of winter visits more genial climates, in large numbers; frequently flying at a great height, and evincing immense power of wing. “When the eggs of this species are obtained, and the young are supplied with food in unlimited quantity, the result is remarkable. The intestines, and with them the abdomen, become so much enlarged, that the animal nearly loses the power of flight, and the powerful muscles that enable him, when in the wild state, to take such flights, become feeble from disuse, and his long wings are rendered unserviceable. The beautiful bird that outstripped the flight of the eagle, is now a captive without a chain. A child will guide him to his resting-place with a wand, and he is unable to raise himself by flight above the walls of the yard that confines him; and he gives birth to a race of creatures as helpless and removed from their natural condition as he himself had become.”

The wild duck affords another example of the great changes effected in the form and habits of animals by altered physical conditions. This wary bird, like the goose, migrates in immense flocks to warmer latitudes. “If its eggs be taken, and the young be supplied with food in the manner usual

in the domestic state, the animals will have changed the form, habits, and instincts of their race. Like the goose, they lose the power of flight, by the increased size of their abdomen, and the diminished power of their pectoral muscles; and other parts of their body are altered to suit this conformation. All their habits change; they lose the caution and sense of danger which, in their native state, they possessed. The male no longer retires with a single female to breed, but becomes polygamous, and his progeny lose the power and the will to regain the freedom of their race. The swan, the noblest of all the water-fowls, becomes chained, as it were, to lakes and ponds, by the mere change of his natural form."

The common poultry of the farm-yard have undergone great changes in form and habits by domestication. In a state of nature they possess considerable power of flight, and perch among the elevated branches of trees, an instinct which domestication does not wholly subdue, as fowls invariably prefer roosting on objects above the surface of the ground, although it is difficult for them to attain even a moderate height. This is occasioned by the increase of their abdominal viscera, and the posterior enlargement of their bodies. The breast becoming wider, and the neck shorter, the wings are unable to bear the increased weight of their bodies, so that they almost lose the power of flight, and become so entirely changed, both in conformation and habits, as to render it difficult to say from what specific stock they have been derived.

Temperature is an agent of great power in modifying the forms and habits of animals. The covering of quadrupeds consists of hair, with an undergrowth of wool or down mixed with it. In warm countries the latter is scarcely at all developed, and the animal is thinly covered with long hairs. In countries possessing an extreme climate the covering of animals undergoes great seasonal changes;—the downy matter or fur increases as the rigour of winter advances, thus serving as a protection against extreme cold. The sheep is an animal which seems peculiarly to belong to temperate regions, where it produces a thick, heavy fleece; whereas, in hot countries, it produces scarcely any wool, and in rigorous climates the wool is not only of a coarse texture but is intermixed with long hair. The covering of animals acts as a non-conductor of heat, and powerfully assists the respiratory and digestive organs in maintaining, under all the changes of climate, the natural temperature of the body. It is said, that dogs, taken from a cold to a warm country, frequently lose not only their fur but their hair also, and become as naked as the skin of the elephant.

We will draw this article to a close in the words of the author to whom we are greatly indebted for the materials of this series of papers. "Sim-

ilar to the effects of temperature is that of humidity, the hair becoming longer and more oily in the moister countries. Even within the limits of our own Islands, the ox of the western coasts, exposed to the humid vapours of the Atlantic, has longer hair than the ox of the eastern districts. Even the effect of continued exposure to winds and storms may modify parts of the animal form. There are certain breeds of gallinaceous fowls which are destitute of the rump, so called. Most of the common fowls of the Isle of Arran, on the coast of Scotland, have this peculiarity. This little island consists of high hills, on which scarcely a bush exists to shelter the animals which inhabit it from the continued gales of the Atlantic. The feathers of a long tail might incommode the animals, and therefore we may suppose they disappear; and were peacocks to be reared under similar circumstances, it is probable that, in the course of successive generations, they would lose the beautiful appendage which they bring from their native jungles.

"The effects, likewise, of altitude are to be numbered amongst those which modify the characters of animals. In general, the animals of mountains are smaller and more agile than those of the same species inhabiting plains. In man, the pulse increases in frequency as he ascends into the atmosphere, so that, while at the level of the sea the number of beats is 70 in a minute, at the height of 4000 feet the number exceeds 100. The air being rarer, a greater quantity of it must be drawn into the lungs to afford the oxygen necessary to carry off the excess of carbon in the system. But gradually, as man and other animals become naturalized in an elevated country, the digestive and respiratory organs, and with these the capacity of the chest and abdomen, become suited to their new relations. Humboldt remarks on the extraordinary development of the chest in the inhabitants of the Andes, producing even deformity; and he justly observes, that this is a consequence of the rarity of the air, which demands an extension of the lungs.

"The effects of use or exercise, in modifying certain parts of the animal form, have been referred to. The limbs of many animals inured or compelled to speed become extended in length, as of the dogs employed in the chase of the swifter animals. The limbs of an animal deprived of the means of motion become feeble and small, as the wings of domesticated birds. In the natural state, the cow has a small udder, yet sufficient to contain the milk which her young requires; in the domesticated state, by milking her, the organ becomes enlarged, so as to contain a quantity of milk beyond what the wants of her own offspring demand. Nor are the characters thus acquired confined to the individuals on which they have been impressed, but may be transmitted to their

posterity. Some of the wild horsemen of the plains of South America are, from infancy, continually on horseback, and their limbs are observed to become slender and almost unfit for walking, which characters reappear in the children of the tribe. Amongst the causes, then, which tend to form varieties, are to be numbered the habitudes of animals, whether in the wild or domesticated state."

HOME DISTRICT AGRICULTURAL SOCIETY.

This society held its annual meeting for the election of officers, and the transaction of other business, on the 14th of February, at the Court House, in this city. E. W. Thomson, Esq., was re-elected President, and W. B. Jarvis, T. Neal, and W. B. Baldwin, Esquires, Vice-Presidents, G. D. Wells, Secretary, and W. B. Crew, Assistant Secretary; Wm. Atkinson was chosen Treasurer, and the following gentlemen, Directors for 1849: Geo. Buckland, Alexander Shaw, Jacob Snider, John Watson, Jonathan Scott, J. P. Wheeler, Nat. Davis, D. Smellie, F. Jackes, R. McNair, J. H. Price, E. Snider, and Dr. Clarke.

The following is an extract from the report presented by the retiring officers, and as it contains an important suggestion, we publish it, in order that our readers (especially in the Home District) may have an opportunity of expressing their opinions on the propriety of its adoption. Our own opinion is, that if the District Society were to hold its meetings at different places in the district, much greater good would be accomplished than by holding them at one point, the consequence of which is that only those persons in the vicinity attend; the same horses, cattle, &c., compete year after year for the prizes—a general apathy among the farmers obtains, because a few animals take the lead and by this system are allowed to keep it, and thus the very object for which the society is constituted, and individuals and the Government subscribe their money, is lost sight of. Considerable opposition was offered by a few members present, but we think the matter should be brought before the various Township societies (which some of the objectors thought ought to be altogether abolished), and their views and feelings ascertained. The District Society belongs to the district, and not to the people in the neighbourhood of Toronto, who may very naturally wish to have its meetings held, and its money distributed among themselves. We trust a more general interest will be awakened to the objects and operations of these Societies throughout the province, and that the hints thrown out by the Report, on the subject of *moving about*, will be taken up by the Township Societies, and their opinions made known before another

year. The suggestion may apply to other districts as well as the Home District.

"Since the last annual meeting, a considerable accession to the members of this society has been made, but still the number falls lamentably short of what it should be. A very great degree of apathy exists amongst the farmers of the district with respect to uniting their efforts to sustain in active operation the District Society. This may arise in some degree from the number of Township societies in operation. Contrary to the general expectation when the establishment of these societies was advocated, the effect has not been to build up the District Society to the extent that was anticipated. Perhaps this is attributable (and it is to be hoped it is) to the circumstance of their meetings being much more convenient to attend than the meetings of the District Society, which are always held in the city of Toronto, and not to an entire disregard of the important benefits such societies, if properly sustained, are calculated to produce.

In view of this subject, the retiring officers beg to suggest the idea of endeavouring to awaken a more general interest, by holding its meetings in the different sections of the District alternately—say in the most suitable place in each Riding. The advantages of this regulation, it is conceived, are many and important, and it is now suggested for the purpose of bringing the subject under the notice of the leading agriculturists of the district. One necessary preliminary measure is important, in view of such a course being adopted; that is, that the section wherein the spring or fall show is to be held, should forego their township meetings, and throw all their strength into the district meeting for that season.

The officers regret that the attempt to get correct statements of the mode of culture, and the other information sought to be obtained by offering extra high premiums for grain and root crops, have not been fully accomplished. But it is to be hoped, that by a steady perseverance in the plan to obtain satisfactory and useful information, the society may be more successful; and it is therefore suggested, that as little deviation as possible be made from the established regulations of the society on that subject."

A tabular form, for the statement of the several facts which should be furnished by the competitors in grain, roots, &c., is annexed to the report, but as we think it rather imperfect, and unnecessarily inconvenient, we shall not take the trouble to publish it. In all probability, the directors will cause appropriate forms to be printed for public use before next fall, in which case we shall notice them. The Treasurer's account shews that the sum of 141*l.* 11*s.* 7*d.* was deposited by the township societies (nine in number), for the purpose of drawing a portion of the government grant. The sum of 65*l.* 4*s.* 8*d.* was apportioned among them out of the said grant. The whole amount in the treasurer's hands during the year was 453*l.* 15*s.* 10½*d.*, of which he paid in premiums 142*l.* 10*s.*, to the Provincial Association 50*l.*, and the re-

mainder to township societies and for incidental expenses, except a balance on hand of 24l. 1s. 6d.

ADDRESS OF LEWIS F. ALLEN, ESQ.

By the courtesy of B. P. Johnson, Esq., the indefatigable secretary of the New York Agricultural Society, we are favoured with Mr. Allen's valedictory address to the members of that society on his retiring from the office of president. The address was delivered at the Capitol, in the city of Albany, Jan. 18th, 1849, and we have perused it with very great pleasure. It is a sensible, manly production, entirely free from exaggeration or national vanity—blemishes occasionally characteristic of American orators. Mr. Allen evidently understands both the theory and practice of the agricultural art; and of its vital importance to the well-being and prosperity of his country. He traces the rise and progress of agricultural societies and periodicals in the United States—or rather in the State of New York, which has always led the van in these matters—and urges with irresistible force the claims of the agricultural interests on the legislature, and the necessity of adequate provision for agricultural education adapted to the wants of the age. We regret that want of room in our present number prevents us from inserting any lengthened extracts from this interesting document. As, however, the author is so favourably known on this side, he having attended, with others of his countrymen, our two last Provincial Associations, and the important society which he represents having given tangible proofs of its sympathy with our proceedings, we shall take an early opportunity of letting Mr. Allen speak for himself, through the medium of our pages, on some of the more important topics discussed in his address, that possess a common interest. For the present, the following condensed statement of some interesting historical facts must suffice.

It appears that in 1819 the legislature of the State of New York granted \$10,000 per annum for a term of four years for the promotion of agriculture, which had the effect of bringing into existence several county societies, and of stimulating individual exertion. An agricultural paper was also commenced in Albany, called the "*Plough Boy*;" and three volumes of "*Memoirs of the Board of Agriculture*" were published. Several importations of cattle were made from England, which laid the foundation of the present improved breeds. A season of apathy, however, ensued, the "*Plough Boy*" got engulfed in politics and died. In 1828, a monthly journal was commenced in the city of New York, entitled the "*New York Farmer*;" but its circulation appears to have been very limited. The "*Genesee Farmer*" was commenced in 1831—first a weekly, afterwards a monthly publication, and it continues, as many of our readers are aware, a most valuable and popular journal. The New York State Agricultural Society was originally formed in 1832, and was sustained for several years solely by private patronage. An attempt was made in 1833 for legislative aid, but in vain. The society, however, held a show in October of that year at Albany, and a creditable exhibition of live stock,

farm produce and implements was collected; but, for want of funds, no premiums were awarded. In 1834 the society commenced the publication of a paper in Albany, called the "*Cultivator*," with the celebrated Jesse Buel as its conductor. This work, our readers need not to be informed, maintains its high character to the present day. A fresh impulse was now given to the cause of agricultural improvement. It was not, however, till 1841 that agriculture again received the patronage of the legislature; in that year \$8,000 per annum were voted for five years. The state society was reorganized to meet the provisions of the new law, and in Sept. of that year a cattle show and fair was held at Syracuse, which, although but an experiment, sufficiently attested the disposition and capability of the farmers of New York to sustain the important cause in which they were now fairly engaged. With what effect they have done so, after a trial of seven years, those of our readers who attended the State Fair at Buffalo last fall will well understand. The valuable and voluminous reports of the Society form an enduring record of its high character and usefulness. And in expressing our wish for its continued prosperity, we would accompany it with an earnest desire that Canada may profit by the example. In reference to the important subject of legislative grants, for the encouragement of agriculture, and other industrial arts, Mr. Allen gives his unequivocal testimony in the following words:—

"Encouraged by that beneficent law, agricultural societies were constituted in a large majority of the counties of the State during that year, which have since been maintained with increasing zeal and benefit. The law making appropriations for this object has been renewed to the present time; and he must be a hardy legislator, who can now raise a voice of potency against its continuance, so deeply grounded are its healthful influences in the affections of our people. An act pregnant with greater good to the prosperity of the State, next to establishing the foundations of social order, and domestic security, never has emanated from your legislature; and long, long, and with increasing bounty, may it continue."

"THE AGRICULTURIST."

We embrace the earliest opportunity of returning our grateful thanks to a number of friends who have expressed their approval, and warm interest in the success, of our publication. We have received assurances from individuals of all shades of politics of their confidence in the sincerity of our professions—that our journal shall not be made a party organ. We have reason to believe after what has transpired, that the recent rash and most unjustifiable attempt of a contemporary to fix upon us a political character will not materially if at all injure the circulation of our paper. The subjoined letter of a correspondent holding, we believe, *conservative* opinions, may be regarded as a sample of the numerous assurances we have received from both political parties in reference to our professed *neutral* character.

We beg also to state for the information of those at a distance who seem to have confounded our publication with an opposition paper recently commenced in this city, that we have no connection whatever with Messrs. Eastwood & Edmundson.—The public may judge for themselves which of the two publications is most deserving support. All we ask is a *fair comparison*, leaving out of consideration some peculiar circumstances we might urge on the ground of equity and fair dealing.—We could get up a paper for a quarter of a dollar less per annum, on the hitherto recognised principle;—“*It will do for Canada.*” But we beg to assure our readers that it is our ambition to present them with a paper that shall in point of mechanical and literary execution be commensurate with the increasing demands of this growing country; a paper that shall obtain a respectful hearing at Home, and that will bear a favorable comparison with the similar productions of our enterprising neighbours on the other side. We shall have our arrangements completed by the early part of summer for receiving regularly the voluminous Reports and Transactions of the three great National Societies of Agriculture, in England, Scotland, and Ireland.

In a word, we are determined to spare no reasonable amount of labour or expense in making “*The Canadian Agriculturist*” useful and creditable to our rising country. We ask that country to aid us—not on the ground of charity, nor indeed as a mere private speculation,—but on the broad, enduring basis of *national utility*.

Denison Terrace, Toronto,
January 27, 1849.

To the Editors of the Agriculturist.

GENTLEMEN—In acknowledging the receipt of the first number of your invaluable paper for 1849, allow me to wish you every success, and that you may find it remunerative to yourselves, to disseminate useful information in all the rural districts of the province. Allow me also to enclose my subscription for this year. What did the agriculturists of Canada think of their profession before we had agricultural papers and societies? I recollect well, when a boy, (and that is not so long since), that a man would be thought wild if he spoke of thrashing, reaping, mowing or sowing machines; and poor, too, if he began thrashing wheat before Christmas. And we were content to rake our hay, barley, &c., with hand-rakes, which then cost 2s. 6d. each, precious articles; and I know an old friend that will have nothing else, although on an old and large farm, to this day; but he does not take an agricultural paper. As for ploughs, we had only the old-fashioned wooden mould-board covered with sheet iron, or the short Yankee plough, of which they boast. I have ploughed many a day with them; but give me the improved Scotch-English ploughs, such as are made by Bell of Toronto. By the way, I hope the trial of ploughs and ploughmen between the Americans and us will not be lost sight of. We can thrash them, if they use their short bull plough, I guess.

I find the *Colonist* condemns your paper for having taken part in politics, and it would serve you right, if you had done so. I have always taken the paper, and do not recollect it, so I think it cannot be anything very flagrant. Now I would not wish you by any means to dabble in politics, but leave it to the *Colonist*; still I think you might stir up the farmers to look more after their interests than they do; and the best way they can accomplish it is, to send fewer lawyers to parliament—(excuse me, gentlemen, I know one of you belongs to the black profession; but your knowledge of, and interest in, our profession is very different from that of some of these gentlemen).

It is our privilege—it is our duty—and it is in our power to have our interests represented by farmers, and we must do it; but heretofore I fear we have thought more of our party than our pockets. Let any man of sense cast his eye about him (unless he happens to be in a lawyer's office), and say whether or not this should be an agricultural country? Look at the climate, the soil, the extent and value of its natural and navigable advantages; in fact everything is in favour of agriculture. To be sure, we are young and delicate yet, and require some protection from our parent state, and have good reason to expect it; but do we get it? And who have we to look after it for us, if we do not ourselves; we must follow the fashion and look out for number one.

Your obedient Servant,
RICHARD L. DENISON.

To the Editors of the Canadian Agriculturist.

SIRS,—Should the following remarks, the result of three years' experience, be considered by you as worthy of a place in your journal, I will be obliged by your inserting them, hoping that some one may be benefitted by them.

In the spring of 1845, being my first year in Canada, I went on a rented farm, in the township of Whitechurch, on which there were three acres of fall wheat, which when harvest came I found to be very much injured by the rust. The wheat grew on dry ground, and had been early sown, and otherwise well laboured. It was fallow the first time broken up, and had received a dressing of farm-yard manure.

Not having seen anything of this disease in the part of Ireland where I came from, I was led, from the loss which I had sustained, to inquire into the matter (and here I may remark, that as lime was very plentiful with us, we were in the practice of using it very largely, every five or seven years); and the conclusion to which I came was, that the ground on which this wheat grew contained an excess of vegetable matter; and on applying some chemical tests, I found a total absence of lime, therefore I reasoned that the excess of vegetable matter in the soil, caused a softness in the external coat of the straw, which under certain peculiar circumstances of the atmosphere, allowed the sap of the plant to exude through the pores of the stem—thus the nourishment which was to have gone to form the kernel of the wheat was drained from the ear, and the sap escaping, allowed the seeds of a tribe of fungus, which are floating about in the atmosphere, to take root upon the plant, and which fungus is neither more nor less than rust,

To endeavour to prevent this disease in my wheat crop the ensuing season, and to do so with as little outlay of money as possible, I took occasion every time I went to Toronto with the waggon, to bring back a load of lime from the gas works; this I got at about half the price I would have paid for it at the lime kilns. I kept it dry until I was going to use it, and applied about forty bushels to the acre on the fallow, harrowing it in with the seed.

Wherever I applied the lime, there was no rust in harvest, but where it was omitted there was very considerable of it.

The lime cost 6d. per bushel, thus the expense was only £1 per acre, the benefit derived was, that where the lime was used, I had thirty bushels of good sound wheat per acre, and where it was not used, I had only eighteen of poor shrunk grain. The account stood thus:—

LIMED ACRE.		
To 30 bushels of wheat, at 4s.....	£6	0 0
To 40 bushels of lime, at 6d.	1	0 0
	£5	0 0
UNLIMED ACRE.		
By 18 bushels, at 2s. 3d.....	£2	0 6
Balance in favour of limed acre	2	19 6
	£5	0 0

This I repeated the following season, and with a similar result, and I am satisfied that any person adopting the like course will find a similar result.

There is nothing from which the Canadian farmers suffer so much as from rust in their wheat crops, and if by the simple and cheap application of a few loads of lime to every acre of fallow, and at the same time taking care that a free passage be given to carry off the surface water, they can in a great measure remedy this evil, I am certain there is no one will regret having tried it, and when they have once tried it, will continue to do so on every possible occasion.

Your obedient Servant,

CURTIS MCFARLAND.

Toronto, 5th Feb., 1849.

AGRICULTURAL ASSOCIATION OF UPPER CANADA.

The annual general meeting of the directors of this important society was held, pursuant to public notice, in the Court House of the city of Toronto, on Wednesday, 21st inst.—Mr. Sheriff Ruttan of Cobourg, the President of the Association, in the chair. Several important matters were disposed of, and arrangements made for conducting the proceedings of the Association for the current year. Among these, we may mention the appointment of the following gentlemen as a sub-committee of management at Kingston, where the next show will be held in September.

J. B. MARKS, Esq., Vice-President of the Association.
ANGUS CAMERON, Esq., Chairman of the Wolfe Island Agricultural Society.

PETER DAVY, Esq., Chairman of the Ernestown Agricultural Society.

HENRY SMITH, Esq., M.P.P. for Frontenac.
DR. BARKER,

WM. FERGUSON, Esq., Chairman of the Pittsburg Agricultural Society, and Treasurer of the Midland District—*Treasurer*.

G. A. CUMING, Esq., Treasurer of the Pittsburg Agricultural Society—*Secretary*.

The Hon. Adam Fergusson being present, and on his way to Montreal, was requested, in conjunction with J. Wetenhall, Esq., M.P.P., to urge upon the Government, the justice and expediency of allowing a liberal grant of money, to enable the Association to discharge all its outstanding liabilities.—It was also resolved, that the President address a circular to the agricultural societies of the different districts, urging upon them the importance of contributing to the funds of the Provincial Association. A vote of thanks was passed to the late executive committee at Cobourg, for the very liberal and successful manner in which they sustained the last exhibition of the society in that town. It was likewise determined, that the Secretary, Mr. Buckland, be instructed to draw up a concise report of the origin and progress of the Association; and that the directors take such means as will soon enable the Financial Committee to meet all the demands against the society. A few individuals in the Huron District have set a praiseworthy example, by subscribing liberally toward that object; and we trust many others will be induced to do the same. £500 are required to place the Association in a healthy condition. The directors adjourned the meeting to the first Wednesday in May, to be then held in the city of Kingston.

We copy the following practical directions from that excellent periodical, *The American Agriculturist*, only premising that what is intended for the Northern and Western States during February, will not be altogether unseasonable for Canada, in March.

Fencing Stuff, Gates, &c.—If not already done, cut and haul all the fencing stuff you require, mortice and shape the posts, split and point the rails, in readiness to put up as soon as the season will admit. See that substantial gates are made and properly hung at the entrance of every field or yard on your farm. Cut and pile your summer fuel, if not done before.

Repair of Buildings.—Carefully examine your barns, stables, and other out-buildings as well as your own dwelling, and see that all necessary repairs are promptly made. Cover them, if necessary, with Mr. Boyle's "cheap paint," as detailed at p. 225 of our seventh volume; or perhaps, what would be better still, the "American Indestructible Mineral Paint," described at p. 11, of the present volume. If either of these is not sufficiently economical, a coat of good whitewash may be put on instead.

Tools, Implements, &c.—Thoroughly overhaul all the implements, tools, and machines on your farm, and put them in good repair, discarding all bad ones, and supplying their places with those that are of the best quality and new.

Maple Sugar.—Prepare for making maple sugar, which should be commenced the latter part of this month, or early in March. See that your sap buckets or troughs are tight and clean, and if you have not enough for the work you have to perform, supply the deficiency by new ones. Put your boilers in order, and arrange them in a manner that will economize in fuel. In tapping your trees, do not make the holes too large nor too deep; neither is it best to tap the trees very far from the roots. Yet the higher the holes are bored above the ground, the more saccharine the juice, and the shorter-lived the trees.

Dressing Flax and Hemp.—If you have flax or hemp to break and dress, it should be done this month, for in March you will have plenty of other work to do.

Care and Management of Stock.—Continue well to look after your stock. This and the next following, are the trying months for animals, and if well carried through these, you may safely trust them afterwards. Those accustomed to green food a great part of the year, and now kept upon that which is dry, should have their condition carefully observed. Roots should be provided, more or less, as a change; such as potatoes, turnips, ruta-bagas, mangel wurtzel, beets, carrots, parsnips, &c. Chaff, with corn-cob and Indian meal, may also occasionally be given. Do not allow them to take their drink too cold nor when over-heated with exercise or work. Let them also be carded, brushed, curried or wiped down with straw, at least once in twenty-four hours. Working animals should invariably have grain, which may be given with chopped hay, or otherwise, and should be fed and watered at regular hours, three times a day. All pregnant animals should have a dry, warm shelter, but should not be made too fat. If near their time, they should be allowed to remain loose, unmolested, in separate stalls, or pens, and should be aided, when necessary, in giving birth to their young. Swine should have constant access to water, sulphur, salt, charcoal, and wood ashes, in order to thrive. Breeding in-and-in should not be practised beyond two or three generations, unless the families from which the males and females have descended are very distantly related.

Poultry.—Provide your hens with warm, comfortable houses and convenient poles to roost upon; and if you wish them to lay well, keep their apartments and nests clean. Allow them to have constantly before them plenty of gravel, broken clam or oyster shells, as well as a heap of wood or coal ashes, brick dust, and finely-pounded old mortar, or lime, to pulverize, or dust themselves in. Give them water, boiled mashed potatoes, mixed with Indian meal, and a little fresh meat of some kind, finely chopped; also grain and the tender refuse leaves of celery, cabbage, &c., and there will be no want of eggs. Turkeys, ducks and geese should be provided with suitable shelters and pens for laying. They should be daily fed with mashed potatoes, chopped turnips, or cabbage leaves, mixed with In-

dian meal, and every few days with a small quantity of oats, buckwheat, or Indian corn.

Manures.—Take proper care of your stable manure, and see that it is not thrown out of a "hole in the wall," there to lie, and mix with snow, as well as to have all the virtue washed out of it, not only by the rain, but by the drippings of the roof. Erect some kind of a shed over your manure heaps, if it is nothing more than a rude covering made of posts set in the ground, with a roof formed of poles, slabs, thatched with spruce boughs or straw. If you have marl, or muck, in your vicinity, that can be dug at this season without exposure to wet, cart or sled it into your yard, or fields, in order that it may be tempered by the genial influences of the frost.

WIRE WORM.—A successful farmer in this vicinity, Mr. D. D. T. MOORE, states that he has tried various substances for preventing the ravages of the wire worm, none of which, excepting sulphur, proved of any use. An Irishman told him that sulphur had been used with advantage in Ireland. Before planting his corn, Mr. M. wet it and rolled it in flour of sulphur, and afterwards coated it in plaster to prevent the sulphur from wasting. He saved a crop by this means, where he had failed for three years before. We see no reason why the sulphur might not be equally effective for any other grain.—*Cultivator.*

ADVICE IN POULTRY KEEPING.—The principles upon which I rely for success in keeping hens, are, first to have two breeds—a few to hatch and rear the chickens, and twice the number of everlasting layers, as eggs are more profitable than chickens; second, to get a hatch as early as possible in spring, and to keep them well; these never cast their feathers like the old birds, and if they begin to lay in autumn, lay more or less all winter; third, never to keep old fowls, (none but favorite fowls ought to be kept more than two years;) old birds lay larger eggs than pullets, but not nearly so many; fourth, to give them the best barley I could get, and as much as they could pick up, once a day in summer, and twice in winter; they are not only more profitable, well kept, but eggs are better. The two breeds I like best are the spotted Dorkings for sitting, and the pheasant breed for laying.—*Agric. Gaz.*

CONNECTION BETWEEN GARDENING & FARMING.—Sir Robert Kane, in an able pamphlet which all who are interested in Ireland should read, has endeavoured to show that the only mode of escape from the evils which belong only to that country, consists in covering the land with small farms. We will not presume to offer an opinion upon the justness of this view, which is that of a man of acknowledged talent, who has devoted himself for a long time to the study of the social condition of the country. As an Irishman and a Roman Catholic, he must be presumed to understand it, certainly demands a respectful hearing; and whether all his opinions meet approval or not, he must at least be supposed to express the truth to a great extent.

If Sir Robert Kane is right, the most urgent want of Ireland is a system of small farms. But he is met on the threshold by this difficulty, that the great mass of his countrymen do not understand the art of cultivation, and are incapable of turning to the necessary profit such land as they may occupy. Hence it was that Lord Clarendon's plan of Practical Instructors met with an amount of success which Englishmen could not comprehend; and hence also the readiness with which it received pecuniary assistance from the most intelligent part of the Irish population, including 10 local farming societies, each of which subscribed its 25*l*.

Yet this is but an imperfect system, and one which

can only effect a small amount of good. To tell a man how to do a thing is something; but to get him to do it, to support him under his inevitable failures, to cheer him on to renewed exertion, and finally to give him habits which in time become so fixed that their origin is forgotten, this can only be done by the well directed exertions of great numbers of associations, conducted by men who not only have no personal interests to serve, but who are willing to make personal sacrifices in working out the ends which they believe to be beneficial to the public. It is only when the dictates of science have so long fallen into a mere routine, that the science is lost sight of, as it is in England, that the mass of the rural population will acquire the character of skilful cultivators.

One of the most powerful of all agents in teaching agriculture to a nation of small farmers, is a central Society of Horticulture, provided it is established on sound principles, and conducted in their spirit. Horticulture is the parent of Agriculture. Gardens existed before farms. Gardening is in truth but farming on a small scale, and *vice versa*. It is in the garden that the minute facts necessary to successful cultivation can be best examined and understood; it is there that the causes of failure or success can be best investigated, and that are tried accidentally or intentionally, those small experiments which lead to the more important experiments in fields. The best of all little farmers are experienced gardeners; the best of all agricultural instructors are intelligent gardeners.

In a garden, the advantage of digging, over scratching the ground, as is now done in wild countries, was ascertained; the plough was then invented to do the same work in the fields. The gardener finds that deep digging is far better than shallow; and then come improvements in the mechanical power of the plough. The gardener finds that his crops are late, or unhealthy or unproductive, in cold, wet land—that his fruit trees canker, his grapes shrivel, and his flowers run all to leaf; he cuts drains and removes the water, restores health and fruitfulness to his crops, and finds that frost is no longer so great an enemy; this is the prelude to agricultural draining. The gardener finds that weeds ruin his vegetables, and he therefore keeps his land clean; his vegetables are no longer ruined, and the farmer follows his example. The gardener learns that his finest crops are obtained by planting widely; years of experience under all circumstances, render this indisputable; and at last the farmer bethinks him that what does in the garden should also do in the field, and thin sowing is the result. In short, it would be difficult to show any one move in the art of cultivation in the field, which has not derived its origin from the garden.

Some persons indeed think that the man who can grow cabbages is by no means able to grow wheat and hay, and that to get the finest celery is no guarantee to the success of a crop of turnips. They are unable to perceive any connection whatever between agriculture and the labours of the florist who grows Auriculas and Picotees, or the high cultivation of the rich man's gardener, who rears his plants in glass-houses with an artificial climate. That there should be a connection between the refined skill which produces the gorgeous Epiphytes in the hothouses of the Duke of Devonshire, and the rough labour of John Coonan's Potato field in Cork street, Dublin, is a thing incredible.

And yet the difference is of the same nature as that which would be found between the grooms who tend the racing stud in Lord Fitzwilliam's stables, and the rude peasant who feeds a stumbling cart-horse with furze from a Welsh common. The groom could manage the cart-horse and bring him into condition, but the peasant could do nothing with the thorough-bred racer.

It is for this reason that Horticultural Societies may be of so much importance; they are or should be cen-

tres from which spreads a knowledge of the art of cultivation; but they are or should be much more; they should be the high schools of principles, either in themselves or in the encouragement which they afford to art, and the support which they thus extend to the prosecution of principles. It is true that this is generally and of necessity done indirectly, but it is not less done or the worse done on that account. A prize is offered for a cabbage; a solitary competitor appears and produces a cabbage, but much inferior to what was hoped for; nevertheless he receives the reward of his exertion. A stand-by says, "Why, I could have done better than that myself!" and he, too, becomes a competitor on the next occasion. Emulation having been excited, we now have two or three competitors, but still their cabbages are poor affairs; nevertheless, they receive their prizes A is No. 1, B No. 2, and C No. 3. But C means to be No. 1, and now applies himself in earnest; he examines, he inquires, he exerts his skill to win, and after a year's care, and we will even say study, he succeeds. He has only produced a cabbage, it is true; but it is a much better one than he could have produced before he set about trying for a prize—he will never again be able to grow cabbages ill, and what is more, he will in future grow every other thing better. Thus a step is gained; the snowball begins to roll, and we all know what happens then, if there be but snow on which to revolve. Experience tells us that human nature will always produce enough of the food required.—*Gardeners' Chronicle*.

CHOOSING A HORSE.—There is much pleasure and profit in the service of a good horse; but very little of either in a bad one. There are many mean horses that make a good appearance when taken from the hands of a jockey. In purchasing a horse then, trust not to the seller's words: let your own judgment or that of a friend, be chiefly relied on. See that he has good fore feet and joints, and that he stands well on his legs. See that his fore teeth shut even; for many horses have the under jaw the shortest: these will grow poor at grass. See that his hair is short and fine, for this denotes a good horse. Observe his eyes that they are clear and free from blemish; that he is not moon-eyed or white-eyed; for such are apt to start in the night. A large hazel colored eye is the best.

Look at his knee; see that the hair or skin is not broke, for this denotes a stumbler. Take care that his wind is good; for a trial of this let him be fed on good hay for twenty-four hours, take him to water and let him drink his fill, placing him with his head the lowest; if then he will breathe free there is no danger. See that his countenance is bright and cheerful; this is an excellent mirror to discover his goodness in. If his nostrils are broad, it is a sign that he is well winded; narrow nostrils the contrary.

See that his spirits are good, but that he is gentle and easily governed; not inclined to start. In travelling mind that he lifts his feet neither too high or too low; that he does not interfere or overreach, and that he carries his hind legs the widest. See that he is well ribbed back, and not high boned. The size may be determined by the purchaser. Age from five to ten is the best. There are many tricks practised by jockies to make horses appear young; all I would say is, that horses' teeth when young, are wide, white and even; the insides of their mouths are fleshy, and their lips hard and firm. On the contrary, the mouth of an old horse is lean above and below; the lips are soft and easily turned up; their teeth grow longer, narrower and of a yellow color.—*Cole's American Veterinarian*.

BLIND BRIDLES.—"Yes, use your thinking powers, friends; they were given you to use, and not abuse.—Blind bridles! truly named, surely. Art never in-

vented a more fatal thing to the eyes of horses than when he devised this plan of depriving the horse of what nature intended he should enjoy. But, says one, how are blinders injurious to the horse? Because they gather dirt and heat around the eyes. Dirt irritates the eye, and heat produces inflammation. These bridles so entangle the eyes of the horse that he is compelled to be constantly straining them to see his way. The over exertion of the nerve brings on disease. Eyes were not made in vain. Had they been needless, the Creator would not have located them in the head.—They were placed on the corner of the head that he might have the advantage of looking in different directions. Men, in the abundance of their wisdom, concluded the horse had too much sight, and they wished to curtail it; hence the origin of blind bridles. Think of this seriously, and you will abandon the use of so destructive an appendage. Remember, that blind bridles and diseased eyes are inseparably connected.—Custom hoodwinks the senses of men as much as blind bridles do the vision of horses.”—[J. MADDOCK, Farrier.]—*Id.*

THE DUKE OF RICHMOND'S SPEECH AT THE SMITHFIELD CATTLE SHOW DINNER.—The “Health of the President” was given by the Earl of Chichester.—The Duke of Richmond returned thanks. He said that, “He hailed with the deepest pleasure the feelings of approbation with which his name always appeared to be received by the great body of tenant farmers of England, with whom he had the honour to be associated. Although he was ever ready to lend a helping hand towards agricultural improvement, and believed that agricultural improvement would be for the benefit of the country generally, he had never stated his opinion that the agricultural interest was the only interest that ought to be considered. He saw no reason why the three interests—the commercial, the agricultural, and the manufacturing, should not be identified. He was happy to remark the rapid strides which, during the last ten or twenty years, the agricultural interest had made towards improvement, mainly owing to the system of drainage which had been adopted by the farmers of this country; and his conviction was that every acre of land should be drained that would pay for draining. He had a few words to say with regard to the monied interest of this country. If he had treble the capital he could now command, he could make more money by it by lending it out for the drainage of land, than the city men did with the course they adopted. If they would lend their money to the farmers of England, they would get good security and a quick return. He was most happy to hear there was an association forming in the metropolis to afford this aid to agriculturists. He had been a short time since in a county not much famed for farming—Lancashire, and he there found that, by means of drainage, stupendous tracts of moorland, which no horse could walk across, had been reclaimed, and were yielding as good crops as were to be found in many parts of Sussex. He had ever felt a deep interest in the agricultural labourer, and, although some of his fellow-landholders might think that he was going too far, he would still say that it was the duty of the tenant farmers to bring every possible piece of land into cultivation, in order to give employment and benefit to the labourer. There was not a gentleman present who would not see to-morrow when he went home, many acres which he must feel satisfied would well repay the outlay upon them for drainage. “One other point, gentlemen,” said his Grace, “before I conclude. No farmer can profitably cultivate land, if his fields are not of a proper size. I will defy any farmer to farm a field of 5 acres, with 8 or 10 drains from an old hedgerow, and more particularly when that old hedgerow contains Ash trees—the

greatest poison to a farm. If you drain you must cut your ash trees. If you neglect to do so, they will check every drain in your field. There are other questions of great importance to the agricultural interest, but I cannot trespass on your attention by touching on them at present. I feel deeply grateful to the Smithfield Club for having appointed me President on the decease of Lord Spencer. I can only say that I have endeavored, as President, to follow exactly the course which I feel, if he had been alive, he would have pursued at every one of our meetings. Gentlemen, I thank you for the compliment you have paid me, and I hope and trust that the Smithfield Cattle Club may long continue.”

BOOK KNOWLEDGE OF FARMERS, DERIDED BY WHOM?—With a man of any reflection and honest care for progress in the arts and employments of useful industry, there are few things more trying to his patience than to hear men, sometimes even gentlemen, who have some pretensions to education, and who therefore ought to know better, denouncing book knowledge as affording any guide in practical husbandry. Now, to all such, and especially to practical men who succeed well in their business, and who have always something useful to impart, as the result of their own personal experience, does it not suffice to say—“I am obliged to you for what you have told me; your integrity assures me that it is true, and your success convinces me that yours is the right rotation, and yours the proper process, since I see that while you gather heavy crops your land is steadily improving; but now, my friend, let me ask you one question further. What you have imparted is calculated to benefit me personally, and unless communicated again by me to others, with me its benefits will rest. Now, suppose, instead of the slow and unsocial process of waiting to be interrogated and making it known, to one by one, as accident may present opportunities, you allow me to have recourse to the *magical power of types*, which will spread the knowledge of your profitable experience, gained by much thought and labor, far and wide throughout the land, that thousands may enjoy the advantages which otherwise I only shall reap from your kind and useful communication. Will not that be more beneficial to society, and is it not a benevolent and a christian duty not to put our lights under a bushel?” Doubtless such a man, if not a misanthropic churl or fool, would say Yes. Yet the moment, by means of types, such knowledge is committed to paper, it becomes the (by fools only derided) *book knowledge*.—*Plow, Loom and Anvil.*

AGE OF SHEEP DETERIORATES THEIR WOOL.—It has been observed, by the most experienced wool growers, that the older the sheep the less fine the wool. The wool is said to be of the best quality when the sheep is from two to five years of age—after that it deteriorates.

Mr. Blanchard, of New York, states that he has known flocks that yielded wool that sorted number one when young, when older drop down to number two or three.

Those who wish to grow the first grade of wool, should keep young sheep. Some go so far as not to use a buck after he is four years old.

AGRICULTURE THE LEADING INTEREST.—It is supposed that three-fourths of the population of the country are employed in agriculture; the other quarter being divided among all other employments and professions. Besides, the mechanic, the manufacturer, the merchant and the professional man, are all mainly dependent upon the farmers for patronage and support. When the farmers as a class are prosperous, all the others participate in their prosperity. From this it

follows, that whatever benefits the agricultural class, directly benefits three-fourths of the people, and indirectly benefits the other fourth.

Surely, then, the farmers have a *right* to demand of government the means to sustain their agricultural societies, and to collect and disseminate important information relative to their calling. Let the light of science and education be brought to the aid of agriculture. Let our resources be developed, and the skill and industry of the husbandman be directed into their proper channels, and results would soon be attained in which not only the farmer would rejoice, but the whole community with him.—*Maine Farmer*.

ROTARY MOULD BOARD PLOW.—The Scientific American says, that at the late Fair the most novel agricultural implement was a Revolving Mould Board Plow, the invention of Mr. Page, of Baltimore. The mould was a circular concave shield, revolving from the point with the sod of earth. This mould board was movable, and could be taken off and put on at pleasure. Whether its complexity will prevent its general introduction or not, remains yet to be seen. Its principle is the combination of a revolving apron to move with the earth, and perform the same office as a friction wheel in a shaft box.

SIDE-HILL PLOWING.—Plows are now made to go forth and back in the same line, and to turn all the furrows down hill. This is convenient when the land lies in such a position that one side of the hill is inaccessible. When one side only can be plowed, the side hill plow turns the whole in one direction, and no lands are marked off. Some farmers object to turning the furrows all down hill, because they would not expose the high parts to barrenness or dead furrows. But plowing furrows up-hill is decidedly up-hill work, and should be avoided if possible. When we have a circular piece of land, rising in the middle to a peak or a knoll, we begin to plow at the base and make the dead furrow on the ridge. It is so much easier turning furrows down-hill than up-hill, that we prefer to cart a larger share of manure on to the peak, and make up the loss.—*Mass. Ploughman*.

A CALCULATION ON DURHAMS.—The committee on cattle, to award premiums, at the last cattle show of the New York Agricultural Society, state in their report as follows: "we believe that if all the cattle sold for beef in the State of New York were full blood Durhams, the farmers of the State of New York would pocket every year some quarter to a half of a million of dollars more than they now do for the same number of cattle."

The same committee also advance an idea which coincides with an opinion which we have long entertained and often expressed, viz., that keeping calves too fat, brings on a tendency to lay on fat when full grown, and deteriorates the milking properties of the animal. They say: "we have no doubt that they appear better during that time fat, than they would in decent growing trim. But we believe there is no doubt that they ever afterward appear less valuable for the purpose of the dairy. Their milking powers being necessarily decreased, and their propensity to take on fat increased, by high feeding at a time when all increase of feed, above what is required for the growth of the animal, must make an increase of fat only."—*Maine Farmer*.

CUTTING FODDER FOR STOCK.—That cutting fodder for stock, especially the coarser kinds, is a subject worthy of more attention among farmers, will, I believe, be admitted by all who have given it anything like a fair trial. Cut fodder of every description is of

more value for stock than uncut. I have known persons to be of the opinion, that a horse would thrive as well upon cut hay, as he would without its being cut, and a moderate allowance of oats added.

This may be claiming too much for it; but yet there is a strong argument in its favour.

Horses, as well as other stock, appear to relish the same fodder better for its being cut; besides the advantage of eating it in half the time, allowing more for rest. It also has a tendency to obviate the difficulty to which cattle and horses are subject in the winter season, when they are kept upon dry fodder, of being bound. But another item in the account, and by no means the least, is in using up coarse fodder, such as wheat and oat straw, corn fodder, poor hay, &c., which will be much better eaten by being cut than without.

I have repeatedly seen fodder offered to cattle and refused, and the same fodder, passed through the hay cutter, returned to them apparently to their satisfaction, from the disposition they made of it. Hay that is musty is much improved by cutting, as the dust becomes liberated by the operation. There is one other benefit to be derived, which is in mixing straw, poor hay, &c., with that which is good, by which means all will be eaten. Some, however, may object that straw and poor hay are in a manner worthless, therefore nothing is gained. But we may recollect that the time has not long since gone by, when very many doubted there being any advantage in grinding corn and cobs together for provender, but experiments have established the fact that there is economy in it; and from some experience in mixing fodder, I think the advantage fully equal to mixing corn with cobs for provender.—*Maine Farmer*.

TWO GREAT BLESSINGS TO THE NORTH.—The Almighty has showered as many blessings upon the northern sections of the Union as they deserve, but there are two which have always appeared to us as being a little more to be praised than some others that surround us. These two are our forests of wood and lumber and our grass fields. We will leave those who are enjoying the warmth of a good blazing fire during this inclement season to appreciate the blessings of the first, while we will descant a little upon the latter. We have noticed for years, that the people of Maine could withstand the loss of almost any crop better than they could the loss of the grass crop. Cut that off and they begin to feel poor immediately. Their cattle must either be sacrificed or fed upon their bread crop. If their cattle are sold or destroyed, they fall short of manure for next year's crops. They must use up many other resources to keep themselves in shape, as they say; and it takes several years to make up the damage and loss occasioned by the loss of one crop of hay. A southern writer, in one of their agricultural journals, some time ago, observed that "the great secret of the astonishing resources of the frozen regions of the north lies in its grasses, of which clover is the chief." The southerner is right.

If you agree with us in this conclusion, you will also agree with us that it is not only a duty, but would be wise, as a matter of profit, to make all possible effort to increase this blessing, by sowing the best of grass seeds; by manuring and enriching fields already in grass, and by draining and ameliorating lowlands to enable them to grow more and better grasses. No crops can be so easily raised as grasses, and if none is more valuable to us, it is good policy to increase as much as we are able.—*Maine Farmer*.

Never buy any quantity of seed without knowing the party you buy of; and before you depend on it for a crop, put a hundred grains in a hot-bed, and see what proportion is alive and what dead.

Horticulture.

TREATMENT OF FRUIT TREES, TRANSPLANTING, &c.

We take the following directions from that excellent work, "Downing's Fruits and Fruit Trees of America." An extensive gardener near this city, when asked for an article on the subject of fruit trees, referred us to the work of Mr. Downing, whose instructions he said could not be improved upon :

As nearly all fruit trees are raised first in nurseries, and then removed to their final position in the orchard or fruit garden ; as upon the manner of this removal depends not only their slow or rapid growth, their feebleness or vigour afterwards, and in many cases even their life, it is evident that it is in the highest degree important, to understand and practise well this *transplanting*.

The season best adapted for transplanting fruit trees is a matter open to much difference of opinion among horticulturists ; a difference founded mainly on experience, but without taking into account variation of climate and soils, two very important circumstances in all operations of this kind.

All physiologists, however, agree that the best season for transplanting deciduous trees is in autumn, directly after the fall of the leaf. The tree is then in a completely dormant state. Transplanted at this early season, whatever wounds may have been made in the roots commence healing at once, as a deposit directly takes place of granulous matter from the wound, and when the spring arrives the tree is already somewhat established, and ready to commence its growth. Autumn planting is for this reason greatly to be preferred in all mild climates, and dry soils ; and even for very hardy trees, as the apple, in colder latitudes ; as the fixed position in the ground, which trees planted then get by the autumnal and early spring rains, gives them an advantage, at the next season of growth, over newly moved trees.

On the other hand, in northern portions of the Union, where the winters commence early, and are severe, spring planting is greatly preferred. There autumn and winter are not mild enough to allow this gradual process of healing and establishing the roots to go on ; for when the ground is frozen to the depth of the roots of a tree, all that slow growth and collection of nutriment by the roots is necessarily at an end. And the more tender sorts of fruit trees, the Peach and Apricot, which are less hardy when newly planted than when their roots are entire, and well fixed in the soil, are liable to injury in their branches by the cold. The proper time, in such a climate, is as early as the ground is in a fit condition in the spring.

Early in autumn, and in spring before the buds expand, may as a general rule be considered the best seasons for transplanting. It is true that there are instances of excellent success in planting at all seasons, except midsummer ; and there are many who, from having been once or twice successful in transplanting when trees were nearly in leaf, avow that to be the best season ; not taking into account, that

their success was probably entirely owing to a fortunately damp state of the atmosphere at the time, and abundant rains after the experiment was performed. In the middle states, we are frequently liable to a dry period in early summer, directly following the season of removal, and if transplanting is deferred to a late period in spring, many of the trees will perish from drought, before their roots become established in the soil. Spring planting should therefore, always be performed as soon as possible, that the roots may have the great benefit of the early and abundant rains of that season, and get well started before the heat of summer commences.—For the neighborhood of New York, therefore, the best periods are, from the fall of the leaf, to the middle of November, in autumn ; and, from the close of winter, to the middle of April, in the spring ; though commonly, the seasons of removal are frequently extended a month beyond these limits.

Taking up the trees is an important part of the operation. A transplanter should never forget that it is by the delicate and tender points or extremities of the root that trees take up their food ; and that the chance of complete success is lessened, by every one of these points that is bruised or destroyed. If we could remove trees with every fibre entire, as we do a plant in a pot, they would scarcely show any sign of their change of position. In most cases, especially in that of trees taken from nurseries, this is, by the operation of removal, nearly impossible. But although we may not hope to get every root entire, we may, with proper care, preserve by far the larger portion of them, and more particularly the small and delicate fibres. After being taken up, they should be planted directly ; or, if this cannot be done, they should be kept from drying by a covering of mats, and when sent to a distance by being packed in damp moss.*

Preparing the places. Here is the fatal stumbling block of all novices and ignorant persons in transplanting. An English gardener, when he is about to plant fruit trees, talks about *preparing his borders*, an American says he will *dig his holes* ; and we cannot give a more forcible illustration of the ideas of two persons as to the wants of a fruit tree, or a better notion of the comparative provision made to supply these wants, than by contrasting the two phrases themselves. The one looks upon a tree as a living being, whose life is to be rendered long, vigorous, and fruitful by a good supply of food, and a soil mellow and easily penetrated by the smallest fibre ; the other considers it very much in the light of a truncheon or a post, which he thrusts into the smallest possible hole, and supplies with the least portion of manure, trusting to what he seems to believe the inextinguishable powers of nature to make roots and branches under any circumstances. It is true that the terms differ somewhat from the nature of the culture and the greater preparation necessary in planting fruit trees in England, but this is not by any means sufficient to justify the different modes of performing the same operation there and here.

In truth, in this country, where the sun and cli-

*We should notice an important exception to this in the case of trees packed for shipping across the Atlantic. In this case they should be packed only in *dry* moss ; the moisture of the sea air being sufficient to keep the roots in good condition, while if packed in damp moss they will be injured by rotting or excessive growth

mate are so favourable, where pruning and training are comparatively so little necessary, the great requisite to success in the ordinary culture of fruit trees is the *proper preparation of the soil* before a tree is planted. Whether a transplanted tree shall struggle several years to recover, or grow moderately after a short time, or at once start into a very luxuriant and vigorous growth, depends entirely upon the amount of care and labor the planter is able to bestow on the soil for his trees. We have seen several instances where, side by side, one man planted his trees in large spaces of deeply moved and rich soil, and another in small holes in the common mode, which uniformly showed the trees of the first larger after five years, than those of the last, after twelve.

No fruit tree should be planted in a hole of less size than three feet square, and 18 inches to two feet deep. To this size and depth the soil should be removed and well pulverized, and it should if necessary be properly enriched by the application of manure, which must be thoroughly mixed with the whole mass of prepared soil by repeated turnings with the spade. This preparation will answer, but the most skilful cultivators among us make their spaces four or five feet in diameter, or three times the size of the roots, and it is incredible how much the luxuriance and vigour of growth, even in a poor soil, is promoted by this. No after mending of the soil; or top dressings applied to the surface, can, in a climate of dry summers like ours, equal the effects of this early and deep loosening and enriching the soil. Its effects on the growth and health of the tree are permanent, and the little expense and care necessary in this preparation is a source of early and constant pleasure to the planter. This preparation may be made just before the tree is planted, but, in heavy soils, it is much better to do it several months previously; and no shallow ploughing of the soil can obviate the necessity and advantages of the practice, where healthy, vigorous orchards or fruit gardens are desired.

The whole art of transplanting, after this, consists in placing the roots as they were before, or in the most favorable position for growth. Begin by filling the hole with the prepared soil, within as many inches of the top as will allow the tree to stand exactly as deep as it previously stood. With the spade, shape this soil for the roots in the form of a little hillock on which to place the roots—and not, as is commonly done, in the form of a hollow; the roots will then extend in their natural position, not being forced to turn up at the ends. Next examine the roots, and cut off all wounded parts, paring the wound smooth. Hold the tree upright on its little mound in the hole of prepared soil; extend the roots and cover them carefully with the remaining pulverized soil. As much of the success of transplanting depends on bringing the soil in contact with every fibre, so as to leave no hollows to cause the decay of the roots, not only must this be secured by patiently filling-in all cavities among the roots, but when the trees are not quite small, it is customary to pour in a pail of water when the roots are nearly all covered with soil. This carries the liquid mould to every hidden part. After the water has settled away, fill up the hole, pressing the earth gently about the tree with the foot, but avoiding the common practice of shaking it up and down

by the stem. In windy situations it will be necessary to place a stake by the side of each tree to hold it upright, until it shall have taken firm root in the soil, but it is not needful in ordinary cases.

Avoid deep planting. More than half the losses in orchard planting in America arise from this cause, and the equally common one of crowding the earth too tightly about the roots. No tree should be planted deeper than it formerly grew, as its roots are stifled from the want of air, or starved by the poverty of the soil at the depth where they are placed. It is much the better and more natural process in fact to plant the tree so that it shall, when the whole is complete, appear just as deep as before, but standing on a little mound two or three inches higher than the level of the ground about. This, when the mound settles, will leave it nearly on the level with the previous surface.

Mulching is an excellent practice with transplanted trees, and more especially for those which are removed late in the spring. Mulching is nothing more than covering the ground about the stems with coarse straw, or litter from the barn-yard, which by preventing evaporation keeps the soil from becoming dry, and maintains it in that moist and equitable condition of temperature most favorable to the growth of young roots. Very many trees, in a dry season, fail at midsummer, after having made a fine start, from the parched and variable condition of the earth about the roots. Watering frequently fails to save such trees, but mulching when they are planted will entirely obviate the necessity of watering in dry seasons, and promote growth under any circumstances. Indeed watering upon the surface, as commonly performed, is a most injurious practice, as the roots stimulated at one period of the day by water, are only rendered more susceptible to the action of the hot sun at another, and the surface of the ground becomes so hard, by repeated watering, that the beneficial access of the air is almost cut off. If trees are well watered in the holes, while transplanting is going on, they will rarely need it again, and we may say *never*, if they are well mulched directly after planting.

The best manure to be used in preparing the soil for transplanting trees, is a compost formed of two-thirds muck or black peat earth, reduced by fermenting it several months in a heap with one-third fresh barn-yard manure. Almost every farm will supply this, and it is more permanent in its effects, and less drying in its nature, than the common manure of the stable. An admirable manure, recently applied with great success, is charcoal—the small broken bits and refuse of the charcoal pits—mixed intimately with the soil. Air-slaked lime is an excellent manure for fruit trees in soils that are not naturally calcareous. Two or three handfuls may be mixed with the soil when preparing each space for planting, and a top dressing may be applied with advantage occasionally afterwards, to increase their productiveness. But wherever large orchards or fruit gardens are to be planted, the muck compost heap should be made ready beforehand, as it is the cheapest, most valuable, and durable of all manures for fruit trees.

A bright ploughshare is the cheapest commodity ever used by a farmer.—Cobbett.

To the Editors of the Canadian Agriculturist.

GENTLEMEN,—A correspondent of yours, signing himself C. J. B., requests information concerning the best mode of cutting asparagus. He says he saw in one of your late numbers an article from a farmer, who grew asparagus as thick as fork-handles, and that he cut the young shoots over the ground. Now I should like to know what kind of fork-handles it was that he compared the thickness of his asparagus with. I can hardly think he meant hay-fork handles, for as far as my experience goes, I have never seen any asparagus shoots that would bear any comparison to the thickness of an ordinary sized hay-fork handle. I think your correspondent must have meant a table-fork handle—and even to grow Asparagus that size would require good cultivation. In answer to the question, whether it is better to cut asparagus under or above the ground, I think it quite immaterial as regards the cultivation. The general and most approved mode of cutting asparagus, is to cut the buds obliquely about two inches *below* the surface, taking care not to wound any of the young buds proceeding from the same roots. If any of your readers wish to have a good asparagus bed, and were to follow out the following directions, I think they would not be disappointed. A piece of ground to grow asparagus for a small family, ought to be 20 by 25 feet. Let this be marked out in a part of the garden that is not too wet, nor the soil too strong or stubborn, but such as will easily fall to pieces in digging or raking. Let this piece of ground be excavated clear out, to the depth of at least eighteen inches; having done this, have a good supply of well-rotted manure at hand, to put into the bottom of your bed—fully four inches thick of the manure and a layer of earth above it, and then another layer of manure; and continue putting in a layer of manure until you raise your bed one foot above the ordinary level of the garden. When you have finished this part of the work, let the whole be firmly trod down, and raked level and smooth on the surface. To plant a bed of this size, you will require four hundred good two-year-old plants, which can be procured at any of the public nurseries. The best kind are the large Battersea, or Giant. To prepare for planting, lay your line within six inches of the outside of the bed, and with the spade cut a small trench or drill, six inches deep. When one drill is opened, plant that before you open another. Let the plants be about twelve inches apart in the drill, and take care to spread their roots well out, and keep the crowns about four inches below the surface. Cover the whole in, and proceed to open another drill, fifteen inches apart, and so on until you have finished your bed. Asparagus beds prepared in this way, and top-dressed every year with well rotted manure, will continue to produce good crops for twenty years. Ground to grow asparagus may be prepared at any season of the year, but the best time to plant is late in the fall, or early in the spring; and all new planted beds of asparagus should be allowed to grow for two years before cutting any. With these remarks on the cultivation of this excellent vegetable,

I am, Gentlemen, yours very respectfully,
JAMES FLEMING.

Yonge Street Nursery,
Toronto, Feb. 14, 1849.

OFFICE OF LEAVES—SINGULAR OCCURRENCE.—

The past season has been unusually favourable to the occurrence of leaf-blight in plums and pears, in many parts of the country. Not only have seedlings been seriously affected, so as to lose nearly all their foliage in midsummer, but large and bearing trees have often become more or less stripped, and, as a well known consequence, the quality of the fruit has greatly suffered.

A singular occurrence, shewing that the flavour in maturing, depends wholly on the office of the leaves, was the following:—The crop of a Yellow Gage Plum tree, by means of daily attacks on the curculioes, was saved from their punctures, and promised a fine supply. But when the fruit was two-thirds grown, and of course wholly destitute of any good flavor, the leaves all dropped from the tree; not one was left. The branches were perfectly bare, with the exception of the load of plums which half obscured them. The plums remained on the tree, without changing any in size, color, or taste, while others on trees not so affected, were rapidly ripening round them. In two or three weeks, a second crop of leaves appeared, when the fruit immediately commenced a second growth, and attained full size. It subsequently assumed the usual color, and all the richness of flavor of well ripened specimens, and was about one month later than the usual period of maturity.

Other varieties, affected with leaf-blight, presented similar results, but less striking; and nearly all of them, soon after the appearance of the second growth of leaves early in autumn, were also observed with a thin crop of blossoms.—*Albany Cultivator*.

THE BEAUTIFUL AND PICTURESQUE.—After its own fashion, nothing can really be more beautiful than is the old-fashioned garden, with its terraces, its parterres, its grass-plots, its clipped hedges, its rolled walks, its trim shrubberies, its shaven lawns, its regularly cut borders, and its fountains or fish ponds, surrounded with green and level turf. Its beauty is, however, artificial, for the most part. We love to see the hand of man thus subdue nature to his purposes. The elegance resides in the regularity. It is the beauty of order opposed to that of luxuriance; of art overcoming the wildness of nature—

"No pleasing intricacies intervene;
No artful wildness to perplex the scene.
Grove nods at grove; each alley has a brother;
And half the platform just reflects the other."

Let that fair garden, however, be neglected for a season. Let the grass grow rankly; the shrubs and hedges remain uncut; the fruit-trees unpruned—let the flowers run to seed, the herbs run wild, the walks become clad with thistles and dandelion and coarse grass, the borders become ragged, and tall weeds mingle with once-cultivated flowers; whilst wild runners thicken the hedges, and moss and ivy and wild flowerets load the walls. Let the luxuriance of neglect usurp the place of artificial neatness, and the charm of beauty is fled. Another, however, has taken its place. A picturesque disorder has sprung up. The lawn is lost in its own grass—the flowers are struggling to emerge from amidst weeds—the narrow walks have become tangled thickets—the sheets of water, forests of reeds or swamps of water-lilies—the arbours have become covers for the weasel or the stoat—the whole one wild wilderness, in which the eye seeks in vain for a resting-place; but which poets describe and tourists mourn over—a sad spectacle of picturesque decay.—*British Quarterly Review*.

RUSSIAN METHOD OF TRAINING FRUIT TREES.—The severity of the winter at St. Petersburg is so great that few fruit trees will survive it, even with careful mat-

ting; to prevent the loss which is thus usually sustained, I have for more than twenty years pursued a mode of training which has been attended with complete success. It consists in leading the branches of the trees on horizontal trellises only ten or twelve inches from the ground. When the winter sets in, there are heavy falls of snow; and as the frost increases, the snow generally augments, by which the trees are entirely buried, and receive no injury from the most intense frost. The winters of 1819 and 1820 were very severe, notwithstanding which, last summer, I had a great crop of apples, and all of the tender sorts, while none of the gardens in the neighbourhood produced any; even many of their trees, although doubly matted, were killed. From my Green Gage and Orleans Plums I gathered ripe fruit on the 19th September last; I had also a very full crop of Morello Cherries. Another very great advantage of training trees in the above method consists in the growth of the wood, it being of equal strength, and the fruit produced being all alike, the bloom comes out much earlier, and the crop ripens sooner. The trees are always clean and free from insects; I have observed this even while some standards near them have had their leaves curled by aphides. The only cherry that does not succeed in this way, is our Black-heart; this I attribute to the damps which affect the early blossoms, but in a milder climate this injury would be obviated by placing the trellis higher from the ground. When the trellis decays under the apples, I never renew it, as the trees always keep (from the strength of their branches) their horizontal position. There are other advantages of treating fruit trees in this manner: they come sooner into bearing, and their fruit is not affected by high winds. I never gather apples, but let them drop off, for the distance they fall is not sufficient to bruise them. Probably pears trained in this way would answer well in England.—*Horticult. Magazine.*

AIR NECESSARY TO ROOTS.—Although the roots of trees and plants must be buried in the earth, yet it is evident that they must have some dependence upon the air, and the fact that plants will flourish better where the soil is stirred, even if not manured, than they will in the same quality of soil that is neither stirred nor manured, is evidence that the air mingled in the soil is of benefit to the roots. It was a theory of Tull that the mere pulverizing the soil was all that was necessary to raise good crops, and by his experiments, where he practiced the pulverizing system thoroughly, proved that it was of great service. We do not, however, subscribe to his theory that pulverizing the soil is sufficient without manure. They should go together—but if manure cannot be had, pulverizing or stirring the earth should not be neglected.

It may seem rather improbable to some, that air should penetrate so far into the ground as to come into contact with the roots. How far down one would have to dig to find earth so compact and solid as to have no air mingled with it, is not known; but that there is more or less so mingled with the ground or earth at a great depth, is certain. Even water, which, though a fluid, is more dense than soil, nevertheless contains much air mixed with its particles, as can be abundantly proved by putting some under the receiver of an air pump, and exhausting the air therefrom. It is said that the seeds of vegetables will not vegetate under an exhausted receiver; and is it not fair to infer that if air is necessary to start forth the roots, it is also necessary to increase their growth?

Every seed is a magazine of material, snugly packed around the germ of the future plant. This material must be changed in its character before it can be used by the plant, and lies dormant until it is placed in circumstances where all the changes which are necessary

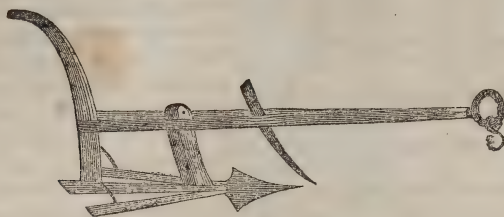
can be brought about. When thus changed, it nourishes the young plant until its roots are extended into the earth and its branches into the air. The first portion of the germ that starts, is generally, if not always, the root. This root plunges into the ground. It at first contains or receives a portion of the changed material of the seed, (which is a sort of gum, and is called by chemists *diastase*.) It absorbs moisture from the earth, and also carbonic acid gas, which mingles with this *diastase*, and is carried up into the leaves. The leaves are so formed by Divine Wisdom, that through the agency of light and heat they *elaborate* or manufacture this sap into the peculiar products essential to the plant, and which characterize and distinguish it from other plants. Thus the leaf of the apple forms the juices peculiar to the apple, and the leaves of the pear the juices peculiar to the pear—and the different varieties of apples, as the Baldwin and the Greening, each the peculiar juices that distinguish these two varieties, and so on. Well, ever after this the root continues to act the same part toward the plant that the seed (or cotyledons) did towards the germ—forming, in fact, a magazine or store house in which the material necessary for future growth of branch and fruit, as elaborated or manufactured by the leaf, shall be stored, at the return of every year, when it receives the stimulus of the approaching sun of spring, be mingled with the moisture containing the inorganic materials necessary for the plant, such as potash, silica, and also of carbonic acid, which forms the woody part. Every one knows that the leaves of a plant and the roots (or rather the little rootlets which spring out from the *under-ground branches*, and which are in fact the proper roots) are dependent upon each other for existence. Destroy the leaves, and the rootlets die. Destroy the rootlets and the leaves die. Each have their appropriate duty to perform, and to enable them to perform these duties, and in the greatest possible perfection, certain things are requisite. To give them these things, so that they may perfect the plant, is the whole art of agriculture, and to practice this art to the greatest advantage, a thorough knowledge of vegetable physiology is necessary. Without, however, going at present any farther into these matters, we will remind our readers that to enable leaves to perform their duties, they must have warmth, light, and atmospheric air—to enable roots to perform theirs, they must have heat, moisture, and atmospheric air. This moisture must hold in solution inorganic and organic materials—hence the use of applying manures which contain those things, and loosen the earth, let in the air, and allow the roots to extend. Also, the importance of stirring the earth frequently, whether you have or have not manures.—*Maine Farmer.*

PROFITS OF APPLE ORCHARDS.—The *American Agriculturist* says, a gentleman having less than seven acres of orchard, realizes from \$500 to \$750 worth of apples annually.

In another exchange paper it is stated, that an old orchard of four or five acres, that had not been ploughed for thirty years, and was said to be worthless, was ploughed and harrowed, and the third year thereafter produced two hundred and eighty bushels of superior apples.

GYPSUM AS MANURE.—Gypsum, or plaster, ought to be used wherever it can be advantageously. It is not only one of the cheapest manures, but one of the most beneficial. It affords direct food to many plants; draws the nutritious gases from the atmosphere for the support of plants; and it concentrates the dews upon them, early in the afternoon, and late in the morning. When plaster is applied and suited to the soil and crop, you can discern its effects for several miles.

Mechanics and General Science.



ROMAN PLOUGH.

THE PLOUGH.

NO. II.

In continuing our remarks on the Plough, we thought it would not be amiss before we leave the historical part of the subject, to present our readers with two or three drawings representing the form and appearance of this implement at different periods of the world, and in different countries. They will be better able to judge of the farming of the early cultivators, and to see and appreciate the great superiority of the modern systems. Show us the agricultural implements of any nation, and we can judge with tolerable correctness of the character of their agriculture. Other circumstances, however, must sometimes be taken into account. In forming an opinion of the agriculture of the ancient Romans, for instance, from such data alone, an American cultivator would be very likely to err. The mellow, fruitful soil of Italy and the neighbouring countries, and the temperate climate with which they are favoured, enabled the farmer to obtain a large amount of produce from his willing fields, with little labour. His implements were rude in construction, and few in number. When Romulus first partitioned the lands of the infant state among his followers, he gave each one as much as he could cultivate well, which he thought should not exceed two acres. After the kings were expelled, the number was increased to seven acres for each citizen. Cincinnatus, who was summoned from the plough to be Dictator, possessed, according to some authorities, only four acres. Several others, distinguished as the most deserving Romans, had estates no larger than this. The Roman farmers lived on these small plots, and cultivated them with their own hands; and when we consider this fact, in connexion with the character of the soil and climate of their country, we need not be surprised to find that the products of their farming, and their general agricultural knowledge, greatly exceeded the standard which we might be disposed to assign them, from an examination of their implements merely.

The cut at the head of this article represents

the Roman plough of a later period than that of which we have been speaking, and it consequently exhibits considerable improvement. It has been well remarked, that "Agriculture, unlike the arts of luxury, has never been subject to any retrograde revolutions." Its advances may have been slow—for long periods it may seem to have been stationary—but still, if we take any generation of cultivators, and compare them with their immediate predecessors, we shall be able to discover (unless some political causes have prevented the result) clear evidences of *improvement*. This fact should inspire the intelligent and patriotic farmer with hope and confidence.

The above plough is that described by Virgil in the "Georgics" as being in use in his day, which was about 750 years after the founding of the city of Rome, and near the commencement of the Christian era. It consists of a beam (*temo*); a body, (*buris*); a share, (*comer*); and a handle or stilt, (*stiva*). The office of the turn furrow is performed by two pieces of wood about six inches long, projecting obliquely upwards, and very properly called teeth (*dentalia*). The sole of the plough has two pieces of wood fixed to it on each side, forming an acute angle with it, in which the teeth are inserted. This exactly answers the description of Virgil "*Duplici, aptantere dentalia dorso*" (the teeth are fitted to the double back).—These teeth help to push aside the earth to the right and left. The point was shaped like the head of a lance. The coulter is similar to that now in use among us. Improvements were gradually made upon this, chiefly in the addition of slanting boards to the teeth, which strengthened the implement, and were better calculated to turn the furrow. The stilt remained for a long time the same at the place where it was attached to the body, but it was divided into two parts near the end for the convenience of holding with both hands. The change from this form to the broad, flat share and the single mould board, by which the earth is turned completely over and the operation of ploughing made to resemble very nearly that of digging, was not difficult to accomplish, though important in its consequences.



OLD ROMAN PLOUGH.

This is a representation of the plough used by the Romans of a much earlier day. It appears here in its simplest form, for it is difficult to imagine any thing more rude or less complex. We find the following account of the way in which it was constructed, under the word *ARATRUM*, in Professor Anthon's edition of the "Dictionary of Greek and Roman Antiquities." "The method of forming a plough of this kind was by taking a young tree with two branches proceeding from its trunk in opposite directions, so that while in ploughing the trunk was made to serve for the pole, one of the two branches stood upward and became the tail, and the other penetrated the ground, and being covered sometimes with bronze or iron, fulfilled the purpose of a share." If the form of the implement indicated a low state of knowledge in agriculture, the mode of constructing it does not certainly impress us with very high notions of mechanical skill. If the hog's snout was the true original of the plough, this assuredly was the first copy of it.



ANCIENT GREEK PLOUGH.

The above is called in some of the authorities, the "Greek plough," and is represented as belonging to an earlier period than the Roman plough at the head of this article. Of the two the last mentioned is probably the more efficient, and in our opinion indicates a higher state of culture.—Though the addition of the wheel, is said to be an improvement which implies an advanced agriculture, it is very obvious that a plough of this shape could not be kept at a uniform depth, even with the assistance of the wheel, without constant and laborious effort by the ploughman. It resembles closely the *bull* or *shovel plough* of this country, used for earthing up corn and potatoes. In a light clean soil it might do very fair work in the way of stirring and loosening, but it would cut a sorry figure in turning over a tough sod, or a stiff clay. In the work above quoted we are informed, that this cut is copied from a "piece of engraved jasper of Roman workmanship." An opinion is

expressed by the author, that "instead of the simple plough of the Greeks" it is more likely to be "that described by the Mantuan poet, and used no doubt in his country." But as Virgil speaks of the share-beams being in the form of the Greek letter A, and also uses other expressions quite inapplicable to any part of the above, we incline to the opinion that it is a Greek and not a Roman plough, and was used long before Virgil's time. Such mistakes and anachronisms are very easily fallen into by the learned explorers of antiquity, who are in most cases practically ignorant of the nature and uses of the common implements of husbandry, even in their own age and country.

Having thus given the reader some idea of the construction and appearance of the *plough* in different ages of the world and among different nations, we shall proceed to consider the scientific principles which it is supposed to involve, and in accordance with which its form is regulated among ourselves.

CHEMICAL COMBINATION.—Another striking example of this chemical creation is the Protoxide of Nitrogen—called from its effects the *intoxicating gas*—a simple combination, in slightly altered proportions, of the oxygen and nitrogen composing the air we breathe; but nowhere existing in nature under the form in which science presents it to us. The admission, now generally made, that atmospheric air is a simple intermixture of gases, and not a chemical compound, scarcely abates the wonder that so small a change in the proportion which ministers to common life, should become the cause of those sudden and singular affections of the brain and nervous system, which alter for a time the whole condition of the being. Chemistry, however, and especially organic chemistry, accustoms us to these wonders. More strange and striking still, in their properties recently discovered, are the two creations of the laboratory, Sulphuric Ether and Chloroform. By working with and among the relative affinities of certain elements, man has obtained these compounds—and there may be others of kindred quality—the simple inhalation of which produces a state of insensibility to pain, even under operations the most severe which surgery can inflict. We have spoken much of chemical analysis. This is in effect an analysis of the compound nature of man; the separation and the removal for a time of a part of our sensitive existence—having close analogy indeed to certain of the conditions of sleep (itself the great miracle and mystery of life,) but even more striking in some of the inferences it conveys; and unless it be that bodily suffering is allotted to us for moral uses—a discovery profuse of future benefit to the human race.—*Quarterly Review*.

EXCHANGE OF SEEDS.—It is an excellent rule in Agriculture, to effect an exchange of seeds as often as once in every two or three years. Why it is that the most of our crops succeed better when cultivated on soil at a slight distance from those on which they were perfected, we confess ourselves unable to decide; yet the fact itself is so obvious, and has indeed been so frequently and fully corroborated by experience, that it no longer admits of a doubt. The winter is a very favourable period for bringing about exchanges of this nature, as well as for procuring new varieties of seeds, plants and roots.

A RUSSIAN BEE-HIVE.

Fig. 1.

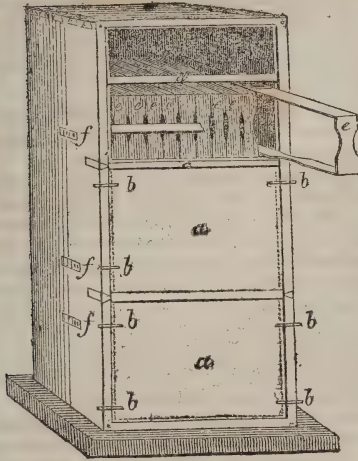


Fig. 5.

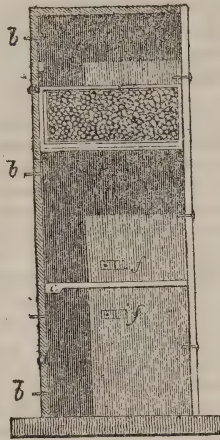


Fig. 2.

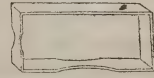


Fig. 3.

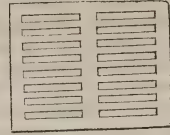


Fig. 4.



RUSSIAN BEE-HIVE.

There has been as much ingenuity expended in the construction of the Bee-hive as in that of the straw-cutter; and in consequence, as many different forms and varieties have been produced. It is impossible for any one, under such circumstances, to pronounce with certainty which is best, unless indeed he should have tried them *all*, for a sufficient length of time to test the merits of each. Such a person is not likely to be found. We had hoped to obtain for this number, a communication from a gentleman near this city, who is an extensive apiarian, and who has tried a number of the improved hives which have been presented to the public within the last few years, and would, therefore, be good authority on the subject. But his remarks are not forthcoming, and we must for the present, do without them. We trust some of our readers who are acquainted with the subject, will take the trouble to give us and the public the benefit of their experience on this point, as well as on the management of bees generally. It is a subject both interesting and useful. And if a better knowledge of the habits, uses, profits, economy and management of this little insect—one of the few of the insect tribe which is not an enemy to man—were more generally diffused, it would make the raising of bees more frequent and successful, and add greatly to the comforts and pleasures of the farmer's home.

We present to our readers, in this number, the plan of a Russian hive, which is said to possess great merit. It is somewhat complicated, and the description will not probably be fully understood by those unacquainted with the subject. We shall, in a future number, give a cut and description of a more simple hive, which answers a very good purpose. But as there is no country in

the world, which produces a greater quantity of honey and wax than Russia, it may be well supposed that the Russians understand the habits and management of bees very thoroughly, and their system is therefore worthy of examination. A new system has lately been introduced by a distinguished apiarian, which has gained immense celebrity, not only in that country, but also in the northern parts of continental Europe, to which it is supposed to be especially adapted. It has also been practised extensively in France.

The Russian system owes its origin and establishment to M. Prokopovitch, an individual who has devoted more than half his life to the subject. His reputation as an apiarian is at present so high, as to have enabled him to establish an extensive school for teaching the art of managing bees. His school and dwelling-houses are situated in the midst of a vast garden, in which are found no less than *twenty-eight hundred hives*. The number of his pupils is never under eighty, who come from all parts of Russia, and remain two years. His terms are very moderate.

In studying the nature and characteristics of the queen, he made the discovery that she always keeps upon the honeycomb, and never creeps upon any part of the hive. This observation he has turned to advantage, so, as to make the bees assort and dispose their honey in whatever manner he desires it to be deposited.

Description of the Russian Bee-hive.

Fig. 1 represents the hive in perspective, supported upon a floor of brick or stone, carried beyond the sides of the hive, so as to secure a solid foundation. The usual size of this hive is three feet six inches in height, fourteen, twenty, and even as much as twenty-two inches in width, and from twelve to sixteen inches in depth. The box or case is made of five boards, either nailed, or, what

is better, dovetailed together. The pieces represented at *a, a, a*, are three doors of equal size, which are fixed into mortices or grooves, and fastened by the pegs *b, b, c, c*, are movable pieces, an inch wide, upon which the movable doors rest. *d*, small slats fastened into the sides of the hive by mortices. These serve to prevent the doors from touching the honeycomb. Each range of frames has one of these slats.

e, e, e, are small frames in which the bees work and deposit their honeycomb. These frames are notched and scooped out circularly upon the lower side, as well as upon both edges of the front end, as represented in Fig. 2. The opening left by the hollow in the lowermost side serves for the bees to enter from beneath, whilst the hollows on the two sides of the front end of the frame admit the movements of the bees to be observed. These frames are thin; their thickness, however, is not arbitrary, but must be made to correspond to the size and form which the bees give to their combs. When placed side by side the frames must not touch, but a small space is to be left between to allow a little play, and prevent them from wedging together, and becoming tight in warm weather, when the wood swells.

f, f, f, are three places of entrance for the bees, furnished with slides. These are so arranged that the middle one comes exactly in the middle of its compartment; the upper one is an inch higher than the upper slat; whilst the lower opening is an inch lower than the lowermost slat.

h (fig. 3) is a grating to be used in autumn, when it may be desired to separate the empty parts from those filled with comb. This grating, or *adapter*, remains in contact with the bees. *g* (fig. 4) represents a small board, which is to be placed on the top of the grating.

Fig. 5 is a transverse section, in which may be seen the places of entrance, *f*, the depth of the frames, *a*, and at *c*, one of the combs.

The various kinds of hives, constructed in sections or compartments, may be divided into two classes, namely,—those in which the divisions are made either horizontally or vertically. The first are founded upon the well known necessity for allowing space for the new combs; the second, from the advantage to be derived from separating the swarms artificially. To carry out these plans, very complicated contrivances have generally been employed, whilst the Russian hive effects every necessary object to be gained from section or division hives.

The leading principle of the Russian hive, which, it will be seen, is quite plain in construction, and economical as to first cost,—consists in its capacity to be reversed or turned upside down, a very simple operation, which, however, leads to the most important results in the management of bees.

Reversing the hive not only allows of the perfect renewal of the wax, but furnishes an opportunity of inspecting everything passing within, by means of the movable doors, and, at the same time, of conducting all the operations at pleasure, thus uniting all the advantages of the two systems of horizontal and vertical section hives, such as the separation of swarms, &c.

By means of the operation of reversing, the bee-manager, who introduces a swarm into the Russian

hive, will, during three years, be able to withdraw each year one of the three divisions alternately, or one-third of the whole mass of honey deposited; at the end of the period mentioned, he will have thus produced a perfect renewal of the wax; that is to say, at this time he will be obliged to reverse or turn up the hive, the former bottom of which now becomes the top.

The mode in which M. Prokopovitch manages to make his bees assort their honey themselves, is effected by means of a very simple contrivance. Many others have devised modes very similar to those adopted by the Russian apiarian, but it is asserted that their objects had not the same end, since they only sought to obtain the virgin honey. No one has before believed it practicable to procure honey of a uniform quality, and which at the same time is virgin honey. The idea therefore originally belongs to M. Prokopovitch, who, whilst pursuing his apiarian studies, had it suggested to him, by a plan adopted by Huber for the mere purpose of being able to watch the habits of bees.

The process of working the Russian hive is as follows: In autumn, after having taken the upper portion of the crop, when the amount of honey admits this to be done, the part of the hive thus left empty is separated from the rest of the comb, by introducing the grating *h*, and placing upon it the board *g*. In this state the hive is conveyed to some suitable place to pass the winter. The following summer, at the arrival of the season when the plant from which honey is to be collected is in flower, the board is removed, and the frames *e* placed upon the grating. These frames, which are made of very thin stuff, have a length equal to the depth of the hive. Their height is about half that of their length, and their width or thickness ought not to exceed an inch and a half.

Two sides of the frame, have, as already described, two notches or hollows which reduce their width. One of these is the long side which comes in contact with the grating, affording passage to the bees, whilst the other is the end near the door which admits the movements of the bees to be inspected. Before these frames are arranged in their places, a little dry wax is to be stuck along the middle of the upper side of the frame, (the side which is not scooped out). This is for the purpose of directing the bees where they must place their combs.

By the arrangement described, the bees, finding above them a vacant space, commence their work in it, and finding in the flowers in bloom sufficient material, fill the cases with honey, and thus they do with the more rapidity from the circumstance of the queen's being separated by a space not yet occupied by the combs, and her inability to reach these to lay her eggs in them. The cases in which the honey is deposited are sealed up immediately the comb is observed to have reached the lower part of the box, and before the queen has had an opportunity of depositing in it any eggs. The honey thus obtained is of remarkable purity, and may be taken to market in the same frames in which it was originally made. These may even be packed up together in cases, and transported in wagons to great distances, without doing the least injury to the honey.

The more a man works, the less time he will have to grumble about "hard times."

THE CHEMISTRY OF LIFE—A wonderful part of the phenomena of Organic Chemistry is the diversity of properties produced, even by slight changes in elementary composition and proportions. We have already noted this in certain instances; but the proofs, most singular and impressive, are those connected with the influence of organic agents on animal life. An atom added to, or abstracted from, a compound, determines whether the product be wholesome or noxious—an aliment or a poison. So closely is the Chemistry of the material world around us associated with that still more refined and mysterious Chemistry which ministers to the phenomena of life! Every solid tissue, every fluid of the body, has its appropriate chemical composition and relations. Every organic function depends upon, or involves, chemical changes in its progress. The air we breathe is no sooner within the lungs than these changes begin; analogous to combustion in their nature, and effecting that transformation from venous to arterial blood, which is essential to life in its every part. The food we take hardly enters the stomach before it becomes the subject of chemical actions, which are continued and multiplied, till its final assimilation and admission into the mass of circulating fluids. All the secretions and excretions from the blood, many of them singularly complex in their nature, depend on like agency; subordinate, however, as is all besides in the animal frame, to that vital principle, which we everywhere see in its effects, though unable to separate or define it. Morbid changes and growths may frequently be referred to the same actions, abnormal in kind; and we have cause to believe that, under deficient vitality, either from disease or old age, these purely physical processes do often so usurp upon the fabric and functions of life, as to become the causes of death. Equally is it to be presumed, from recent researches of physiology and pathology, that certain diseases have their origin in chemical changes of the blood; either generating morbid agents within itself, or multiplying by an action analogous to fermentation, poisons and morbid matters received into the body. This wonderful fluid, ever in motion and change, and subject at once to chemical laws and to the principle of life, is in itself a mine of future discovery; not to be worked otherwise than by consummate skill and perseverance, but promising results which, as respects both science and human welfare, may well reward the highest efforts of research.—*Quarterly Review*.

GEOLOGY.—The surface of the earth is 196,862,256 square miles; and its solidity is 259,726,736,516 cubic miles.

The sea is to the land, in round millions of square miles, as 160 to 40, or as four to one.

The earth is, according to different measurements, 7912, 7916, and 7924 miles in diameter; and about 24,860 or 24,880 miles round.

Those of the ancients who did not believe in the sphericity of the earth, thought it a cylinder, or an extended plane. Homer made it circular, and the outside water, and this was the idea of the Jews. The later Greeks from Pythagoras and Thales taught the sphericity. But the popes believed it a plane, giving all to the west to the kings of Spain.

The surface of the sea is estimated at 150 millions of square miles, taking the whole surface of the globe at 197 millions, and its greatest depth is supposed to be equal to that of the highest mountains, or four miles; but La Place thinks that the tides demand an average depth of three miles, therefore, the sea would contain 450 millions of cubic miles.

The remains of animals and vegetables in the rocks and earthy strata of the earth, are the true and only means of ascertaining its history and natural changes

before the records of man. The discoveries made on this subject within the last half century, form an era in science in which the name of Cuvier will always be distinguished. In all countries, on digging to certain depths, and in mining, the remains of fishes, vegetables, quadrupeds, and birds, are found in the soil or embedded in the rocks, except in those of primitive antiquity. The general regularity with which those that are marine are laid at one level, and those which are products of land are laid at another, and the alternations of these marine and land products, lead to the conclusion that the sea has repeatedly covered the land for long periods of time, and that the land has, at intermediate periods, been dry; and what is very remarkable, the remains found consist, and always at certain depths, of species of animals, vegetables, &c., not now in existence, and often, of genera not natural to the present climate. Cuvier has enumerated several hundred genera of animals, fishes, and vegetables so found, of which there are none of the living genera or species. The lowest rocks, it is therefore inferred, were at one time the surface of the earth, and the seat of organic life. These appear to have been destroyed by some great revolutions which brought new tribes of organized beings, while their kinds prove that the surface was covered with water. The subsequent appearance of amphibia, &c., prove the development of dry land; these appear to have been swept away, and among later solid rocks, the monstrous race of herbivorous quadrupeds and gigantic lacerta came into existence when the earth seems to have acquired herbage for their subsistence. How long this race kept possession cannot be guessed, but their length of life is well known. The gypsum, &c., which now contains their remains is covered with newer deposits, abounding in sea shells, and above that stratum is found a new race of herbivorous animals of the genera of the elephant, rhinoceros, &c., and above them is the first loose soil, intermixed with marine substances, proving second or third immersions of the sea; and above this lies the soil which the present race of animals enjoy. What may yet follow, and when, and how, is a curious question.

In the newest solid rock formations, whales, seals, and birds appear; above these land animals of enormous size, birds, and fresh water shells, all in concrete rocks.

COVERING METALS WITH BRASS OR BRONZE.—For Brass, employ a solution in water compound of 500 parts of carbonate of potash, 20 parts chloride of copper, 40 parts sulphate of zinc, and 250 parts nitrate of ammonia; and after scouring the article to be coated, properly, it is put in commotion at the ordinary temperature with the negative pole of *Bunsen* battery, the positive decomposing pole a plate of brass.

For Bronze. Make use of the same preparation and perform in the same manner, as for brass, with the exception of substituting a salt of tin for the sulphate of zinc, and apply bronze to the positive pole instead of brass.

By means of these solutions, wrought or cast iron, steel, lead, zinc, tin, and the alloys of these metals, either with each other or with bismuth and antimony, may, with facility, be coated with brass or bronze, and after having undergone the usual coloring process they equal in beauty the finest bronzes.

When very large surfaces are to be coated, the number of pairs of plates to the battery should be increased. By this method, rough cast iron may be made to assume a very beautiful appearance, and will remain unoxidized when not exposed to the weather. For *outside* work articles should be protected by a coating of suitable varnish.—*N. Y. Farmer*.

Domestic and Miscellaneous.

THE ROSE AND THE GEM.

BY A YOUNG LADY BORN BLIND.

If this delicious, grateful flower,
Which blows but for a little hour,
Should to the sight so lovely be,
As from its fragrance seems to me,
A sigh must then its colour show,
For that's the softest joy I know;
And sure the rose is like a sigh,
Born just to sooth, and then—to die.

My father, when our fortune smiled,
With jewels decked his eyeless child;
Their glittering worth the world might see,—
But Ah! they had no charms for me;
A trickling tear bedew'd my arm—
I felt it—and my heart was warm;
And sure the gem to me most dear,
Was a kind father's pitying tear.

USEFUL RECIPES.

TOPRESERVE GREEN CURRANTS.—Currants may be kept fresh for a year or more, if they are gathered when green, separated from the stems, put into clean, junk bottles, and corked very carefully, so as to exclude the air. They should be kept in a cool place in the cellar.

CANDLES.—Very hard and durable candles are made in the following manner: melt together ten ounces of mutton tallow, a quarter of an ounce of camphor, four ounces of beeswax, and two ounces of alum. Candles made of these materials burn with a very clear light.

VARNISHED FURNITURE.—If you wish to give a fine soft polish to varnished furniture, and remove any slight imperfections, rub it once or twice a week with pulverized rotten-stone and linseed oil, and afterwards wipe clean with a soft silk rag.

CREAM.—The quantity of cream on milk may be greatly increased by the following process: Have two pans ready in boiling hot water, and when the new milk is brought in, put it into one of these hot pans and cover it with the other. The quality as well as the thickness of the cream is improved.

TEETH.—Honey mixed with pure pulverized charcoal is said to be excellent to cleanse the teeth, and make them white. Limewater with a little Peruvian bark is very good to be occasionally used, by those who have defective teeth, or an offensive breath.

TAINTED BUTTER.—Some good cooks say, that bad butter may be purified in the following manner: Melt and skim it, then put into it a piece of well toasted bread; in a few minutes the butter will lose its offensive taste and smell; the bread will absorb it all. Slices of potato fried in rancid lard will in a great measure absorb the unpleasant taste.

TOMATOES PIE.—Tomatoes make excellent pies. Skins taken off with scalding water, stewed twenty minutes or more, salted, prepared the same as rich squash pies, only an egg or two more.

It is a great improvement to the flavour of PUMPKIN PIES to boil the milk, stir the sifted pumpkin into it, and let them boil up together once or twice. The pumpkin swells almost as much as Indian meal, and of course absorbs more milk than when stirred together cold; but the taste of the pie is much improved.

Some people cut pumpkin, string it, and dry it like apples. It is a much better way to boil and sift the pumpkin, then spread it out thin in tin plates, and dry hard in a warm oven. It will keep good all the year round, and a little piece boiled up in milk will make a batch of pies.

Most people think BRASS KETTLES for washing are not as likely to collect verdigris, if they are never cleaned in any other way than by washing in strong soap suds just before they are used.

INK SPOTS.—If soaked in warm milk before the ink has a chance to dry, the spot may usually be removed. If it has dried in, rub table-salt upon it, and drop lemon juice upon the salt. This answers nearly as well as the salts of lemon, sold by apothecaries. If a lemon cannot be easily procured, vinegar, or sorrel-juice, will answer. White soap diluted with vinegar is likewise a good thing to take out ink spots.

STARCH.—Frozen potatoes yield more flour for starch than fresh ones. The frost may be taken out by soaking them in cold water before cooking; if frozen very hard, it may be useful to throw a little salt-petre into the water.

CEMENT TO MEND EARTHENWARE AND GLASS.—The cement sold about the country as a great secret, is nothing more than shellac melted and drawn out into sticks. Heat the article a little above boiling water heat, and apply a thin coating on both surfaces of the broken vessel, and when cold it will be as it was originally.

ICE IN HOT ASHES.—A traveller, who lately visited Mount Etna, gives the following account of a phenomenon which struck his notice:—The main crater is about five hundred feet deep at this time, so say the guides; but I think this must be measured down the slope of the funnel. I could not, however, see to the bottom, owing to the volleys of sulphurous smoke whirling up ever and anon, accompanied by a rumbling noise, and occasionally a slight vibration of the ground underfoot. Here I found, amid the warm ashes, on the slope of the crater within, heavy crystals of ice, set all at one angle, and curved like a shark's teeth. I picked up one piece as big as a walnut, and asked the guide if he could account for its presence. Far be it from him to give a "rationale" of anything of the sort; it would derogate from the dignity of Etna. It reminded me of a chemical experiment played off by a French savant at one of the late "Scienziati" meetings. He made water freeze in a red-hot cup. The silver or platinum being brought to a red heat, a few drops of water are thrown in, which do not evaporate, but jump about. Sulphuric acid is now poured in, which in the act of boiling produces so intense a cold by the disengagement of its latent heat, that the drop of water at once turns to ice. I opine the chemical process here to be the same, only on Nature's grand scale. The morning mists supply the moisture, and within the crater there is no lack of sulphurous mixture boiling as in a retort; hence as hot fumes ascend, the crystals of ice are precipitated. If any one rejects this solution of mine, let him find a better, remembering he is to account for pieces of ice forming on a bed of warm ashes. The principle of "disengagement of latent heat" may also account for the severity of the cold felt on Etna, which is far greater than is due to its elevation.

STEAM v. THE TURF.—A good many years ago, one of the toughest and hardest riders that ever crossed Leicestershire, undertook to perform a feat which, just at the moment, attracted the general attention, not only of the country, but of the sporting world. His bet was, that if he might choose his own turf, and if he might select as many thorough-bred horses as he liked, he would undertake to ride 200 miles in ten hours! The newspapers of the day described exactly how "the squire" was dressed—what he had been living on—how he looked—how, at the word "Away!" he started like an arrow from a bow—how gallantly Tranby, his favourite racer, stretched himself in his gallop—how

on arriving at his second horse he vaulted from one saddle to another—how he then flew over the surface of the earth, if possible, faster than before—and how, to the astonishment and amidst the acclamations of thousands of spectators, he at last came in—a winner! Now, if at this moment of his victory, while with dust and perspiration on his brow—his exhausted arms dangling just above the panting flanks of his horse, which his friends at each side of the bridle were slowly leading in triumph—a decrepit old woman had hobbled forward, and in the name of Science had told the assembled multitude, that before she became a skeleton she and her husband would undertake instead of 200 miles in ten hours to go 500—that is to say, that, for every mile “the squire” had just ridden, she and her old man would go two miles and a half—that she would, moreover, knit all the way, and that he should take his medicine every hour and read to her just as if they were at home; lastly, that they would undertake to perform their feat either in darkness or in daylight, in sunshine or in storm, “in thunder, lightning, or in rain”—who, we ask, would have listened to the poor maniac?—and yet how wonderfully would her prediction have been now fulfilled! Nay, waggons of coals and heavy luggage now-a-days fly across Leicestershire faster and farther than Mr. Osbaldestone could go, notwithstanding his condition and that of all his horses.—*Quarterly Review.*

GOOD ADVICE TO BOYS.—Be *brisk, energetic and prompt!* The world is full of boys—and men too—who drawl through life, and never decide on anything for themselves—but just draggle one leg after the other, and let things take their own way. Such people are the dull stuff of the earth. They hardly deserve as much credit as the wooden trees; for the trees *do all the good they can*, in merely growing, and bearing leaves and seeds. But these drawing, dragging boys do not turn their capacities to profit, half as far as they might be turned; they are unprofitable, like a rainy day in harvest time. Now, the brisk, energetic boy will be constantly awake, not merely with his bodily eyes, but with his mind and attention during the hours of business. After he learns what he has to do, he will take pride in doing it punctually and well, and would feel ashamed to be told what he ought to do without telling. The drawing boy loses in five minutes the most important advice. The prompt, wide-awake boy never has to be taught twice, but strains hard to make himself up to the mark, as far as possible, out of his own energies. Third-rate boys are always depending upon others; but first-rate boys depend upon themselves, and after a little teaching, just enough to know what is to be done, they ask no further favours of anybody. Besides, it is a glorious thing for a boy to get this noble way of self-reliance, activity and energy. Such a one is worth a hundred of the poor, dragging creatures, who can hardly wash their own hands, without being told each time how it is to be done. Give me the boy who does his own work promptly and well without asking—except once for all, at the beginning—any questions. The boy who has his wits about him, is never behindhand, and don't let the grass grow under his heels.—*Farmer and Mechanic.*

MANAGEMENT OF CHILDREN.—Love to these children, proceeding from a cheerful, affectionate spirit, I should have perhaps mentioned even earlier. Love leavens the whole. I can hardly bear to treat it as a thing by itself, for nothing can be done without it. It is as the breath in our bodies, and no teaching of yours will benefit the children, if the spirit of love be not there. Consider the relation in which you stand to them. The mother's highest office is yours—from your *tone* they take *their tone*; you look around upon their young

and bright faces, and if your heart does not glow with something like a mother's love, you had far better give up your post at once; for useful and respectable as you may be in another office, God and nature will condemn you, if you come to your present work with a cold, uninterested heart.

You will readily acknowledge this—but the difficulty is in applying it; for you may be very anxious to do good and kind things, and yet your self-will and good opinion of your own plans may be more than a match for your love. Many teachers encumber themselves with a number of rules and devices, over and above what they may receive from their employers, which tie their hands grievously, and compel them to lose a hundred little occasions of sympathising and helping their children, because they think they cannot do it without some departure from the strict law they have laid down for themselves. I am aware that on the contrary, some err from the want of rule or system, but I believe this by no means the worst sort of mistake. The spirit of love towards those committed to your care, will manifest itself in your *cheerful* tone towards them. This is surely very important. If you wear a dull and mournful face, your whole school will be deadened and stupified. If such be your general tone too, you will probably not be ready when they want your sympathy. What a pity to miss the joy in a child's eye, when she comes to her friendly teacher, full of some little unexpected pleasure! What a loss not to have been her help and comfort in some small grief! Or perhaps the whole school may be under some circumstance either of pleasure or annoyance. Suppose a bitter cold day—you know how poorly they are often clad; now it would be unkind to forbid a complaint or an attempt to warm themselves; better by far to give up every thing else till the grievance is abated. Set the example of stamping, clapping and rubbing of hands and faces; your sympathy will warm them as much as the exercise itself. Or if they are in a merry mood (for joy spreads like wildfire) let it have vent for a few moments. Your giving way for a short time will make the necessary restraints that follow the easier. Let them sing little cheerful songs, provided you can bring them into pleasant tune and time, which certainly requires patience, and to be made in some degree a pursuit, but richly rewards by the soothing and refining effect it has upon the school.

I should not feel that this part of the subject, *that I* mean of a cheerful and loving spirit towards the children, had been fairly dealt with if I did not allow to the teacher that her employment is a very wearing one, and that the more conscientious she is, the more will she be in danger of suffering from anxiety, from disappointment from promising children turning out ill, from the unreasonableness of parents, and sometimes I fear from the same fault in her employers. Under the pressure of these things, and from the constant confinement, bodily strength flags; health is apt to give way, and then you grow nervous and wear a careful cloudy brow. You must check this as far as the evil, coming from your own minds, admits of a check. **PREPARE** well for the duties of your day. A few minutes' calm thought, a heartfelt prayer for yourself and the children, will do more than any thing else in soothing you and setting you off aright. Dwell much upon mercies and blessings, and try calmly and thankfully to believe that if you put your trust in God, all things will work together for good to you and to your charge. There may be a danger of attaching too much importance to *yourself* as an instrument in that work. Better to indulge any thought of this kind very sparingly, or, (besides other evils), you may fall into the habit of looking forward too much, whereas you will act with greater freedom and simplicity, if you endeavour to take the work of the day *in the day*, only petitioning for your

daily supply of help and strength, and when it is over quietly letting the thoughts of it go. Health, however, with all the rational care we can take of it, will fail sometimes, and then many teachers give up at once. I think they often err here. Though under much weakness, perhaps pain, it may be difficult to do one's duty, there is some help afforded by experience of bodily affliction; I do not speak of constant sufferings and hopeless weakness, but of occasional infirmities, more or less frequent.

Now with regard to these, patient endurance softens the spirit and makes it compassionate and grateful for small attentions. No teacher can fairly reckon much indeed upon the forbearance of a school of giddy children; in these cases the only possible way to get on is to think as little as you can of yourself, and many a fine lady might be cured of mental and bodily disease by the outward calls made upon you. *This* I can tell you for your comfort, that some of the most admirable teachers I have ever known, those who have exercised the best influence over their scholars, have been persons of weakness, in some cases of bad health. It seemed as if the strong efforts which they put forth to prevent the appearance of suffering had an invigorating effect upon their whole characters, and enabled them to do what individuals less skilled in patience and fortitude never would have done. May it not be reckoned among the benefits which are sometimes drawn from trouble of this kind, that if there has been any natural disposition to lightness, any want of true sobriety of spirit, it may very likely be remedied in *this* school of affliction. You must not indeed wait for such trial, in order to be raised above levity of manner and improper behaviour, especially towards the other sex—but you may be thankful if you are not left to be tempted by high spirits and unbroken ease.

In your character, then, integrity, humility, love to the children, and a sober, serious spirit should prevail, and be manifested in your government. Of course as a beginner, all these qualities will require the greatest watchfulness, and cannot be maintained without the use of the appointed means. These and many other qualities must be put forth if you have any true desire to do your duty, whatever may be the plan adopted in the school, or whatever the superintendence to which you are subjected, and for this reason I shall finish what I have further to say respecting the general spirit of your government, before I touch on any particular plans.

There is one caution I would venture to give you with regard to the mere knowledge communicated in your school. By no means undervalue the children's learning, but yet look more to the spirit in which knowledge is conveyed than to the knowledge itself. It is a very common mistake which is made by young men and women a little advanced before most of the young men and women of their own class, that they are apt to value their acquirements too highly. They think learning is not merely "better than house or land," but better than temper, better than health, better than a sound mind and strong body. Do not take up such absurd notions as these, for depend upon it, these acquirements, if not given in the right spirit, are, I will not say useless, but by no means of that high value which some people think. Observe, I do not even except religious knowledge, when I speak of the possible overvaluing of learning; indeed you may do but little good by adopting certain ways of imparting religious instruction. You may cram a child's head full of scripture facts and scripture doctrines, without in the least advancing it in the way of personal religion. There is such a thing as a teacher fancying she has discharged her conscience and done her duty by a child, because she has scolded it (if we may so say) in the language of scripture, unmindful all the time of the spirit in which she has ventured to use such sacred weapons. This is indeed so gross a decep-

tion, that it may be hoped it is not very common—but still I fear many teachers are hardly aware of the caution required in quoting scripture, or of the presumption of using it in an unholy, unkind spirit. Some persons will *fling* a text at you, as if it was their own property, to use or abuse as they please. And there are others, kinder and milder, who do not so; but who overload children's memories with what they can neither understand nor apply. Now I do not say that children are to learn nothing but what they can *directly* understand. Something must be laid up in the mind's storehouse for future use, and it is in the experience of many people that what was not quite intelligible when first learnt, explains itself as we proceed. Children must trust us and learn with patience what now may seem dull and uninteresting, which is no more than we ourselves often do from a sense of duty—the only difference being that their weaker will requires more of the aid of authority. This however may be fully admitted, and the principle acted upon, and still caution be observed in not doing so much with a view to the future, as that the mind is injured thereby for the present time. With very young children in particular, you should not so much regard the quantity they have learnt by rote, or the fluency with which they are beginning to read, as whether their whole minds seem to be awake and alive—whether they can really see and give a just account of any object or fact that comes before them. I cannot help observing here how important a point is this which has just been touched on. How many people there are who seem never sure that they have seen or heard correctly, yet who go on all their lives spreading reports of things that may affect the character or prospects of hundreds of their fellow-creatures! How difficult it is to come at the exact truth respecting even a fact which happened in the next room! Why? because the people who give an account of it have not been accustomed early to state things plainly, exactly and simply; because they do not feel the importance of accuracy; of seeing and stating what *is* or *is not*. Lawyers and jurors, who know that the lives of human beings often depend upon the exactness of a principal witness on a trial, can tell you how much good you may do, if you are so happy as to teach your children this regard to correctness in small things. Never neglect it in yourself—never pass over a little exaggeration or misstatement in your scholars. Do not treat it as a wilful lie, or threaten, or punish them unless it grows to a very serious height, but endeavour to inspire them with *love* of simple truth; have an approving word ready for the child who gives you the most correct account of its doings, or of any thing it has seen or heard, and let that child have the pleasure of feeling that your reliance on her truth is strengthened—that you can trust it another time.—*The Schoolmistress, by Emily Taylor.*

DINNER OF THE MESSRS. RANSOME TO THEIR WORKMEN.—These celebrated English implement makers, (of one of whose ploughs we gave an engraving in our January number,) gave a splendid entertainment to their work-people at the commencement of the year. Fifteen hundred persons—including visitors—sat down to a sumptuous dinner, in a commodious building, richly and most tastefully decorated for the occasion. This firm has been in existence at Ipswich for upwards of sixty years, and the festival was held in celebration of an enlargement of the works. Upwards of eleven hundred people are employed in this establishment, so honourably known for the superior character of its productions, as well as for the strict integrity of its extensive transactions.

THE BEST BREED OF SHEEP.—Let it be assumed, that the best breed of sheep is that which produces the greatest net profit in money from a given quantity of food,

LIMESTONE WATER.—It is well known that in those regions of country where limestone abounds, the water is so strongly impregnated with it (making it too *hard* as it is called), as to render it unfit for washing, and many other domestic purposes, by curdling with the soap—encrusting boilers, &c. Where no other water is to be had, the disagreeable effects may be remedied in some degree, by the following means :—

For washing, the curdling of the soap in the water can be prevented, by boiling a bag of wood ashes in the kettle, which will not hurt the hands so much as ley made in the common way. For cooking, *saleratus*, in the proportion of about one small tea-spoonful to a gallon of water, will neutralize it sufficiently. For the toilette, its effects upon the skin are sometimes very distressing. I have often known the hands of children, as well as those of other people, so chapped by it as to crack open and bleed. This may be prevented by washing with vinegar, after the hands, &c., have been wiped dry.—*American Agriculturist*.

BEWARE OF THE RING BONE.—If colts stand on a plank or any hard floor that is not well littered, they will be subject to the ring bone. When breeding horses, we left the floor of the colt's stables of the soil over which they were built. If this should be a deep loam, or of a clayey texture, then remove the soil about two feet deep, and replace it with sand, or the finest gravel to be obtained. Colts should always be let out to exercise in a yard, or open space, every day, during the winter, when not particularly stormy; and in this yard there should not be older horses, or any horned cattle which can do them injury. Being very playful, they are more apt to provoke attacks upon them than other animals.—*American Agriculturist*.

HOW EMIGRANTS SHOULD SETTLE.—The way is to go and set yourself down among the natives. They are already settled. They can lend you what you want to borrow, and happy they are always to do it. And, which is the great thing of all great things, you have their women for your women to commune with.—*Cobbett*.

COLONIAL PRICES.—Sydney : Wheat 4s. 9d. to 5s. 6d. a bushel ; bread, 3d. to 3½d. the 2lb. loaf. Maize, 1s. 10d. to 2s. per bushel ; potatoes, from £3 for the best colonial, to £4 10s. Horned cattle, £2 15s. a head, being a rise of 7s. 6d. a head ; sheep, 5s. 6d. to 6s. 6d. ; horses, from £3 to £19, average about £8 ; pigs, 2d. to 2½d. per lb. Dairy produce : Five tons of butter paid market dues in the week, sold at 8d. to 10d. per lb. ; four tons of bacon, 3½d. to 5d. ; four tons of cheese, 3½d. Poultry : Turkeys, 6s. 6d. to 6s. 9d. ; ducks, 2s. 3d. a pair. Fuel : coals, 18s. per ton ; wood, 5s. per ton. Among the importations coastwise are 150 doz. oranges from Hawkesbury, six cases from Brisbane Water ; lemons, 300 doz. from Hawkesbury.

GOLD MINES IN ENGLAND.—While we have American returns of gold mines in California, and mineral riches abroad, we are well pleased to find that at home parties do not lose sight of the precious metal. It is well known that our metalliferous rocks and lodes yield gold and silver, although, in most instances, too minute to render them of any commercial value, and, generally speaking, being found in the gossans. It is now some months since that attention was directed, through our columns, to the produce of gold in Merionethshire ; and although the question may be open as to whether the sovereign is obtained *minus* or *plus* the value, yet the fact has been elucidated that the mineral lodes in North Wales yield gold, a bar of which weighing 3lb. 7 oz. has been placed in our hands, as the product of the Cwm-hesian Mine, near Dolgelly. The mine is worked

for lead, and the lode is represented to us as being "interlaced" with strings of gold. Some six or seven pounds of the precious metal have been obtained, and the ore at Bank will, we are informed, yield at least 200 oz. of gold. We merely mention the circumstance with the view of directing the attention of our readers to the subject.—*Morning Journal*.

TO MAKE GOOD BUTTER IN WINTER.—We often hear the complaint that butter made in winter is poor. Ours was so for several seasons. It was very slow in coming, and frothy, white, and sometimes bitter ; while butter made from the same kind of milk in the warm season was good. I devised many plans for improvement, such as throwing in salt, warm milk, scalding cream, &c. ; but to no purpose. At length I scalded my milk when brought from the cow, afterwards setting it in either a cold or warm place as most convenient. I mean, I communicated sufficient heat to my milk to destroy the effect which frosty feed in autumn or dry feed in the winter had upon it. Since which time we have made, with fifteen minutes' churning, purer, sweeter and more yellow butter than we ever made in summer—and sometimes from the frozen cream gradually warmed. And were it not that the increase of manufactures, the pursuit of fashion, and other causes combined, render helping hands in the dairy-room now-a-days very scarce ; I should be at the trouble of scalding my milk before setting it during the summer, as well as in winter ; for surely, butter made in this way possesses a delicious richness and dryness which cannot be found in any other.

Farmer and Mechanic.

A HOUSE-KEEPER.

HOW TO COOK VEGETABLE MARROWS.—Cut the marrows into short pieces ; take out all the pith and seeds, and boil them in plenty of water, with salt.—When well boiled scrape out all the marrow, then mash it well, adding salt, pepper, and a little butter ; it is then a dish fit for any table. The marrows may be sown about the first week in May, in the open ground in a warm corner ; when transplanting time comes, the early potatoes will not be near ripe ; but a root of potatoes to be lifted every six or eight feet apart, in every sixth or eighth alternate row, and the marrow to be inserted in the place. I find that when thus planted in moderately rich land, I can grow 20 tons of marrow to the acre easily ; and when ripe they can be stowed away anywhere and will keep good for a very great length of time. In addition to their utility as a vegetable for the table, they form a most economical and excellent article, when boiled, for fattening pigs.—JAS. CUTHILL, Florist, of Camberwell, Nov. 2.

EMIGRATION AND COLONISATION.—"Ma," said a young lady to her mother the other day, "what is emigration?" Mother : "Emigration, dear, is a young lady going to Australia." Daughter : "What is colonising, Ma?" Mother : "Colonising, dear, is marrying there and having a family." Daughter : "I should like to go to Australia."

EFFECT OF RAILWAYS ON THE VALUE OF LAND.—It is estimated in New England that for three miles on either side of a railroad, the agricultural lands have advanced ten dollars per acre since these iron avenues to market have been opened.

LARGE POULTRY.—At a show held in England, under the direction of the late Earl Spencer, the following were the dressed weights of some of the poultry exhibited: The best turkey weighed twenty lbs. 4 oz. ; aapon, 7 lbs. 14½ oz. ; pullet, 6 lbs. 3½ oz. ; goose, 18 lbs. 2½ oz. ; couple of ducks, 15 lbs. 10 oz.

Editors' Notices, &c.

A CANADIAN.—We will, if possible, comply with your request in our next. A description in detail of hop culture would require much space. If you think of planting this spring, seize the earliest opportunity to plough the ground as deep as possible; if subsoiled it will be all the better, and have your cuttings in readiness.

AN AMATEUR.—Your enquiry respecting the best kinds of gooseberries adapted to Canada, we will submit to one of our horticultural correspondents. The same to

J. C. B.—in reference to apples and the management of fruit trees. In the mean time we direct his attention to an article on transplanting in the present number.

J. S. will see that we have already anticipated most of his suggestions. We have no space for lengthened tales and light literature. Most of our readers have little time to spend in such kinds of reading—they want something practical and substantial. An occasional short article, however, on the classical antiquity of husbandry—its historical progress—the poetry and natural theology of rural life and affairs—would be highly acceptable.

M. M., Etobicoke.—Your marl contains a sufficient quantity of lime to pay for digging and hauling to a moderate distance. It is a valuable manure for general purposes. We intend going pretty minutely into the question of manures hereafter in our scientific series of papers.

W. P. N., Elora.—It would afford us much pleasure to publish your communication, accompanied with a cut of the wheel, &c., but as you have not secured your patent in the United States, such a course might prove disadvantageous to you. Indeed, you request us not to put it in the power of any cute "Yankee" to steal your invention; how then can we insert your description of it, or go into an explanation of its principles ourselves? To make any general remarks, without stating the principle on which the wheel is driven, would convey no information to our readers. If you wish any explanation of your invention to go before the public, you had better file your specifications and make claim for a patent at Washington, as soon as possible, and then you need not apprehend any danger. It will cost from \$600 to \$800 to complete your patent in the States. We were informed by Sheriff Ruttan, that it had cost him the latter sum to receive a patent for his invention in Ventilation. For a small sum, however, you can file your papers, and thus secure your invention from being pirated. Our terms are 4d. a line for advertisements.

J. S. M., Montreal.—Received. We are glad to find persons in your situation taking an interest in our publication.

J. P., Cornwall.—This is the first instance we have heard of a post-master *refusing* so small a favour to the *Agriculturist*. If our paper were a *party* organ, or a mere private enterprise, we should not be surprised to find post-masters disinclined to step out of the way to advance its interests. But when every man of sufficient intelligence to keep a post-office, and of sufficient honesty to be entrusted with one, must see and admit the great benefit a well-conducted agricultural journal is calculated to effect in a country so exclusively agricultural as ours, he does not display much public spirit, or a very peculiar fitness for his situation, who, as post-master, refuses the slight assistance of receiving and enclosing a subscription for such a paper. We are greatly pleased to know, that the post-office department will soon be under the controul of the provincial legisla-

ture, when disobliging and unfit persons will be likely to find themselves relieved from those duties which they seem to consider a bore. In the mean time we must do without the attention of Mr. Wood, the *Cornwall* post-master. Our paper brings a revenue of between 150*l.* and 200*l.* per annum to the post-office; and apart from the advantage to the country of such a publication, it strikes us that the officers of this department should be the last to throw any obstacle in its way.

W. S. B., Trafalgar.—You should have enclosed your subscription for this year also. Please read our terms.

W. F., Brockville.—Your favour was too late for this number. We shall find a place in our next. You need not mind returning the extra copies, as we have more of that number than we require.

W. O., Preston.—You mistake our meaning with regard to paying postage. It was on the letter enclosing a *dollar*, where the person sending it is entitled to the paper for 3*s.* 9*d.*, that we proposed to pay postage, and *not* on the papers during the year.

A. D., Raleigh.—Your name is on our list, and the papers have been sent to you in the same way as to others. If you have not got them, we have done all that we can do. You speak of paying postage, &c., but if you did not get your papers, we are at a loss to know how you paid postage on them; and as to your letter of complaint, you took care to make *us* pay that.

W. H. A., Port Hope.—We have sent the number of copies you request, except to those whose names were already on our mail book; and as the 1st and 2nd numbers *have been* addressed to these persons, and as we shall require all our surplus copies of the first three numbers for our new subscribers, we cannot afford to send *duplicates*. The amount due us, treating your society as if it had taken the same number of copies last year, will be £10. 6*s.* 10*d.*, which you can enclose in a letter—a simpler mode than that you suggest.

The latest intelligence from England (February 10), represents the grain market as firm; but quotations are low, with little hopes of much improvement, as stocks are very large, and daily increasing from importations. The corn duties have now ceased, and the British market is equally open, free of duty, to all the world. Lord John Russell, at the opening of Parliament, expressed the determination of his government to resist any return to a duty on foreign corn. A few days will determine the fate of the Canada Reciprocity Bill, at Washington. We learn from several correspondents, that the sowing of wheat in the British Islands was completed under more favorable circumstances, than from the excessive wetness of the weather it was at one time anticipated.

TORONTO MARKET.

FEBRUARY 28, 1849.

Flour, per barrel of 196 lbs.	18	0	@	21	0
Wheat, per bushel.....	3	9	@	4	6
Potatoes, per bushel.....	2	6	@	3	0
Pease, per bushel, 60 lbs.	1	8	@	2	0
Oats, per bushel, 34 lbs.	1	0	@	1	2
Bacon, per cwt.	23	6	@	27	0
Hams, per lb.	0	3½	@	0	4
Butter, in kegs, per lb.	0	6	@	0	7
Butter, (fresh) per lb.	0	7½	@	0	9
Pork, per 100 lbs.	15	0	@	21	0
Beef, per 100 lbs.	12	6	@	17	6
Turkeys, each	2	0	@	3	0
Fowls, per couple	1	0	@	1	3
Eggs, per dozen.....	0	7	@	0	9
Hay, per ton	45	0	@	60	0
Straw, per ton	25	0	@	30	0

FRUIT AND ORNAMENTAL TREES.

1849.

PUBLIC attention is invited to the extensive and well-selected assortment of *Fruit and Ornamental Trees*, grown at the **TORONTO NURSERY**, for sale in the ensuing Spring. Persons about to plant Trees are respectfully requested to visit the grounds and examine the stock, which, for extent and variety of large, well-grown, healthy Trees, of the most approved varieties, now equals any establishment of the kind between this and New-York. The grounds now contain more than Twenty Acres, planted with all descriptions of Nursery productions.

FORTY THOUSAND APPLE-TREES,

and upwards, four and five years from the graft, are now ready for sale, with a proportionate number of the most desirable sorts of Pears, Plums, Cherries, Peaches, Nectarines, and Apricots. Also, Grape Vines, Gooseberries, Currants, Raspberries, Strawberries, Rhubarb, and Asparagus Roots. Many of the finest varieties of Pears may be had on Quince stocks, now so much esteemed for garden culture.

The collection of Ornamental Trees, Flowering Shrubs, and Hardy Roses, is quite extensive, and contains all the hardy varieties suitable for Pleasure-Grounds and Shrubberies. Also, a large stock of Dahlias, Herbaceous and Green-house Plants.

The supply of Hedge Plants is also worthy of special notice. Upwards of 100,000 plants of English Thorn, Privet, &c. can now be furnished.

Nurserymen commencing business, in want of Specimen Trees and Plants, and persons purchasing in large quantities to sell again, are supplied on liberal terms, and will find it to their advantage to give this Nursery a call.

Trees grown here are better adapted to the Canadian climate than those brought from the South. Trees sent out by boats or other conveyances are invariably freshly dug, and many Farmers can have them taken up and put in their own wagons while on the ground, thereby avoiding all risk of failure after transplanting.

A new Descriptive Catalogue, containing directions for successful Transplanting, has lately been published, and is furnished *gratis* to all post-paid applications.

Orders from a distance, accompanied by a remittance or a satisfactory reference, will be promptly and punctually attended to. Articles sent out are correctly labelled and securely packed, to secure safe transmission to any part of the Upper and Lower Province.

GEORGE LESLIE.

January, 1849.

By Her Majesty's Royal Letters Patent.

BUTTER'S PATENT

BRICK AND TILE MACHINE.

THIS Machine grinds the Clay and moulds the Brick directly on the pallets, by Horse Power, and delivers them ready to be put into the hack or pile, making from 25 to 35 per minute, according to the length of the lever the horse is attached to, thereby saving 75 per cent. more manual labour than any other machine extant. Terms made easy. Orders promptly attended to, and Machines set in operation in any part of the Province. For further particulars apply to Mr. Thos. Anderson, Yonge Street; Mr. Wm. Groves, Richmond Street, Toronto; or Mr. Henry Beek, Builder, No. 11, Richmond Street, Toronto.

Jan. 1, 1849.

THE TORONTO

Carriage and Light Waggon Manufactory,

130, KING STREET WEST,

(Established—1832.)

OWEN, MILLER & MILLS,

FROM LONDON.

EVERY description of Carriage, Light Waggon, and Sleigh, kept on hand for sale, and built to order, of any pattern.

Painting, Trimming and Repairing, done in the best manner, on reasonable terms, and with the utmost despatch.

FOR SALE—Lace, Patent and Plain Axletrees, Springs, Lamps, Bands, Patent Leather, and other Carriage Trimmings.

January 1, 1849.

NEW CARRIAGE FACTORY.

WILLIAMS & HOLMES,

HAVE REMOVED their *City Carriage Repository*, to 142, YONGE STREET, where they have started a Manufactory in all its branches. Parties wishing to purchase for Private or Public Business, are requested to give them a call before purchasing elsewhere, as their facilities are such as to enable them to manufacture cheaper than any other Establishment in Toronto.

Toronto, January 1, 1849.

1-tf

N.B.—The public are particularly invited to an inspection of their Lumber and other Building Materials, as none but the very best will be used.

CANADIAN

PATENT HEMP, FLAX, & OIL MILLS.

NOTICE TO FARMERS.—Wanted to purchase, for CASH—

10,000 Bushels Flax Seed

1,000 Acres Hemp Straw.

1,000 Acres Flax Straw.

The Proprietors of the above establishment having secured by Royal Letters Patent the invention of an entirely new process, especially adapted to this country, for the preparation of Hemp and Flax, hereby give notice, that they are now ready to enter into engagements, to an unlimited extent, with all persons wishing to sow the same. Those parties willing to contract for the ensuing season, will please make application at once to the Proprietors, either at the Works, opposite the Deer-Park, on Yonge-Street, or at the Office, No. 22, Wellington Street, Toronto.

McGEE & DEW,
Proprietors.

January, 1849.

1

SHOE AND LEATHER STORE.

DANIEL FARAGHAR begs to inform his friends and customers, that he has opened a *Shoe and Leather Store*, at No. 22½, Yonge Street, Toronto, where he will be prepared to furnish all kinds of work in his line at the most reasonable prices. Having a Tannery of his own in active operation, he can supply the Trade and others with as good an article of Leather, and at rates as low as can be obtained elsewhere.

DANIEL FARAGHER.

Jan., 1849.

1tf

NOTICES OF THE "AGRICULTURIST," BY THE PRESS.

We give below a few of the many favorable notices of our journal by the provincial press. We thank our contemporaries for their good wishes, and are happy to find that among so many, representing different interests, and embracing every variety of political opinion, but one paper has said a word in disparagement. The reason, or rather the want of reason, for this, was exhibited in our last number. It may be some satisfaction to the well-wishers of the *Agriculturist* to know the feelings of the press generally towards it, and we therefore select the following for that purpose:—

CANADIAN AGRICULTURIST.—We regret we had not received No. 1 of this most excellent journal earlier than to-day. We shall fully notice its *real worth* in our first re-issue; meantime, let farmers and all others apply to us personally, and we shall exhibit and point out its merits; and if they don't subscribe, we shall say *we wonder!* The original articles on "The application of Science to Agriculture," and on "Domesticated Animals of the Farm," are worth more than the price of the journal. The art and science of farming is neatly recommended to notice in the article titled "The pleasures and happiness of a Farmer's life." The work, containing woodcuts, is now published in bookshape, and at the end of the year will form a large, handsome and most useful volume.—*Oxford Star*.

CANADIAN AGRICULTURIST.—The first number of this neatly got up magazine is now before us, and we recommend it to the patronage of our agricultural friends. A large proportion of the present sheet is original, comprehending much useful information in a popular form, and the extracts are made judiciously and with taste. The illustrative woodcuts, likewise, are entitled to a high meed of praise, and, on the whole, we have not met with a periodical of the class, more deserving of an extensive circulation. We may add that the *Agriculturist* is edited by Messrs. Buckland and McDougall, is neatly printed by Messrs. Rowsell and Thompson, and contains thirty-two pages—the subscription being 5s. per annum.—*Streetsville Review*.

THE CANADIAN AGRICULTURIST.—We notice, with pleasure, the first number of a new series of this periodical. It now appears as an 8vo of 32 pages, monthly, at \$1 a-year, published in Toronto, by Messrs. George Buckland and William McDougall, and is very well got up, both editorially and mechanically.

The cultivation of the soil, and the care of stock, are such delightful occupations, besides being the main-stay of our prosperity, as a country, that one magazine on these subjects, in Canada West, ought to secure a subscription list sufficiently large, to enable its publishers to issue a first-rate work. We are somewhat aware of the difficulties they have met with, but we trust they are in a great measure overcome, and that they will have an opportunity of devoting themselves to their excellent undertaking with such energy as to produce a monthly every way worthy of the cause, and which will challenge a comparison with similar works in any other country.—*St. Catherine's Journal*.

We have received the January number of the *Canadian Agriculturist*, an excellent and well-conducted monthly, published at Toronto by Messrs. Buckland and McDougall, at the low rate of \$1 a-year. The number before us is the first, and it is a good specimen. It is devoted to agriculture, mechanics, general science, horticulture and domestic economy; and believing firmly that such a publication is calculated to do a vast amount of good, if properly supported, we commend it to the attention of our agricultural friends; a dollar cannot be turned to better account.—*Ottawa Advertiser*.

The *Agriculturist*, of Toronto, has put on altogether

a new appearance. No. 1 of the new series now lies before us; and if it is to be taken as a fair sample, we have no hesitation in saying that it is the best agricultural paper yet presented to the Canadian public. A large proportion of this number is filled with original and very interesting matter. Its principal Editor is Mr. George Buckland, Secretary of the Provincial Agricultural Association, an English gentleman who has recently made Canada his home, and who, we understand, combines good literary and scientific abilities, with long experience and a practical acquaintance with the subject to which he has devoted himself. * * * We sincerely hope so useful a publication will be well sustained by that large and useful class of our population for whom it is more particularly designed.—*Pictou Sun*.

THE CANADIAN AGRICULTURIST.—The second number of this periodical, which we have perused with some attention, fully bears out the opinion we formerly expressed of its merits. Beyond all question, it is the best edited agricultural paper which has yet appeared in our Province, and can hardly fail to be productive of important benefits to the class for whose use it is more immediately designed. In the original articles we recognise a judicious blending of science and practical experience, whilst the selections prove that the best sources of information, European as well as American, are at the command of its conductors. Once more we heartily commend the "Agriculturist" to the attention of the farmers of Canada, assuring them that by a careful study of its pages, they will be enabled greatly to increase the productive resources of their adopted land. We must not omit to mention, that Mr. Buckland and his co-editor deny, in the most pointed terms, that their journal is characterised by aught of a political nature,—and most assuredly we have been unable to detect, in the numbers already published, one expression or allusion which could justify the charge of partizanship, so rashly made by one of our city contemporaries.—*Church*.

THE CANADIAN AGRICULTURIST, a continuation of the *Cultivator*, is now under the editorial charge of Mr. Buckland, assisted by Mr. McDougall. It is well got up, and contains a variety of matter of the greatest interest to the Canadian farmer. Having handed the first number to a friend who takes a particular interest in agricultural matters, he has sent us a brief notice of the *Agriculturist*, which will be found above.—*Chronicle & News*.

[The very flattering article to which the *News* refers, and for which we thank the writer, is too lengthy for this place, or we should gladly insert it.—Eds.]

THE CANADIAN AGRICULTURIST.—The first number of this very useful agricultural journal, for the year 1849, has come to hand, and it is, without exception, the best work of the kind printed in the Province. It is greatly improved in appearance and looks well. We would recommend it to the agriculturist as a work of much importance to that class of the community. It is published at the low rate of one dollar per year. We regret that the crowded state of our advertising columns precludes us from inserting the Prospectus for this year.—*Brantford Courier*.

Our neighbours on the other side of the line have given considerable attention to Agricultural publications, but hitherto we have done little in this respect. We, therefore, hail with pleasure the appearance at Toronto of the *Canadian Agriculturist*, a publication, which, if carried on with the same zeal and talent with which it has been commenced, will leave the Canadian public nothing to desire. The original articles shew great knowledge and skill in handling the subjects, and the arrangement and selections, a most practised judgment.—*Montreal Gazette*.

CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. 5, ix.

GEORGE BUCKLAND,
WILLIAM McDOUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, APRIL 2, 1849.

No. 4.

THE CANADIAN AGRICULTURIST,

A MONTHLY JOURNAL OF AGRICULTURE, HORTICULTURE, MECHANICAL AND GENERAL SCIENCE, DOMESTIC ECONOMY AND MISCELLANEOUS INTELLIGENCE; Published by the Proprietors, W. McDougall and Geo. Buckland, on the first of each month, at their Office, near the South-West corner of King and Yonge Streets, Toronto.

Subscription, One Dollar in advance. Advertisements 4d. per line each insertion.

Societies, Clubs, or local Agents ordering 12 copies and upwards, will be supplied at 3s. 9d. per copy.

Money enclosed in a letter, and addressed to the "Editors of the Agriculturist, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, need not wait to be called upon.

Payment in advance being the only system that will answer for a publication so cheap as ours, we shall send the remainder of the volume to none but those who order and pay for it.

Subscribers who desire to continue the work, will do well to send their orders without delay, for, as we do not mean to print a large edition with the view of having a surplus, we cannot promise that at the end of two or three months we shall have any back numbers on hand.

TRAVELLING AGENTS.—Mr. T. M. MUNN is our Travelling Agent for the Eastern section of the Province; Mr. PALMER, for the Northern; and Mr. JAMES WILLSON, for the Western; who are authorised to re-

ceive subscriptions for last year's volume as well as for the present.

LOCAL AGENTS.—Any person may act as a local agent. We hope that all those who have heretofore acted as such, will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending four subscriptions. Those sending twelve and upwards will be supplied at 3s. 9d. per copy.

TORONTO NURSERY.

FOR SALE, an extensive collection of FRUIT TREES, consisting of all the choicest sorts of Apples, Pears, Plums, Cherries, Peaches, Grape Vines, Raspberries, Gooseberries, Strawberries, Currants, Asparagus, and Rhubarb Root, &c.

Also, Ornamental Trees, Flowering Shrubs, Hardy Roses, Herbaceous Flowering Plants, &c., in great variety.

Descriptive Catalogues, containing directions for transplanting, furnished gratis to post-paid applicants.

GEORGE LESLIE.

March, 1849.

4

CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash prices for 1000 Bushels clean Timothy Seed; 100 Bushels clean Spring Tares; 100 White Marrowfat Pea; 25 Bushels Flax Seed.

JAMES FLEMING,
Seedsman and Florist, Yonge Street.

Toronto, Jan. 1, 1849.

1

SEED WHEAT.

A QUANTITY of very superior CAPE SPRING WHEAT, grown by CAPTAIN SHAW, Oak Hill, Toronto, for sale by the Subscriber, at 7s. 6d. per Bushel.

JAMES FLEMING,
Seedsman, Yonge Street.

Toronto, Feb. 28, 1849.

3-2in.

PHŒNIX FOUNDRY,

No. 58 YONGE STREET, TORONTO.

GEORGE B. SPENCER,

(LATE C. ELLIOT,)

CONTINUES every Branch in the above Establishment, as heretofore; and in addition, keeps constantly on hand a good assortment of COOKING, PARLOR, BOX and AIR-TIGHT STOVES, of the most approved patterns.

Also, a SECOND-HAND ENGINE, with or without the Boiler, 12-horse Power, will be sold very cheap for Cash or short payment.

Toronto, Jan, 26, 1849.

1-tf

MAMMOTH HOUSE.

New Dry Goods & General Outfitting Establishment,

Opposite the Market, King Street East, Toronto.

THOMAS THOMPSON respectfully solicits the attention of his numerous friends throughout the country to his large and well-assorted Stock of

STAPLE AND FANCY DRY GOODS,

particularly adapted for the Country Trade, consisting of Woollen Cloths, Blankets, Flannels, Sheetting, Hosiery, Prints, Cloaks, Bonnets, Factory Cottons, Cotton Warp, &c., with an immense Stock of Hats, Caps, Furs, &c.; together with a large and general assortment of

READY-MADE CLOTHING,

suitd for the Season, and manufactured on the premises; also, a well-assorted stock of Ladies', Gentlemen's and Children's BOOTS and SHOES, of every description, and at unusually low prices; the whole of which, with the Clothing, will be made by the best of workmen, under the direction of experienced foremen, and will be sold at unprecedented low prices.

Farmers and Mechanics, call and try the "Mammoth House," opposite the Market.

January, 1849.

1

MESSRS. DENISON & DEWSON,

ATTORNEYS, &c.

New Market Buildings, Toronto.

January 26, 1849.

2

SEVERN'S BOTTLED ALE.

THE Subscriber, having resumed his former business in a convenient locality, with a large stock on hand, of a superior quality, and in prime condition, would hope to secure a continuance of the patronage and support hitherto conferred upon him.

J. D. BARNES,

6, Wellington Buildings,

Adjoining Mr. Sterling's, King-st.

Toronto, January, 1849

1

BRONTE MILLS FOR SALE.

THE Property consists of sixteen feet privilege on the Twelve Mile Creek on the Lake Shore, in the township of Trafalgar, and about seventy-five acres of good cleared farm Land; a large stone and frame Woollen Factory, 82 feet by 32 feet, and three stories high, capable of being easily converted into a Flouring Mill; a Grist Mill with one run of Stones, Smut Machine, and all requisites; two Saw Mills, with Circular Saw and Lumber Yard Railway; a Blacksmith's Shop and several Dwelling Houses. This property is now let to a yearly tenant for £200 per year, and would bring on a lease, £250. Price £2,500, of which only £1000 would be required down; the residue might be paid by instalments, as agreed upon.

ALSO,

A Privilege on the same Creek, of 12 feet next above the Mills, with about 75 or 80 acres of land, mostly cleared, and in cultivation, and an excellent Mill Site, with good Roads. Price £100, of which £300 would be required in Cash; the remainder by instalments. The option of this part of the property is offered to the purchaser of the first, and if not taken, it will be sold separately.

ALSO,

Adjoining the above, a Farm of about 70 acres, in full cultivation, with a large unfinished Dwelling-House thereon, and an Orchard of 4 acres of grafted Fruit Trees. Price £700, of which only £200 would be required immediately; the rest in ten years. The whole of the above property will be sold together, if desired. For particulars apply (post paid) to S. B. HARRISON, Judge H. D. C., Toronto.

Toronto, March 1, 1849.



STOVES! STOVES!! STOVES!!!

J. R. ARMSTRONG,

CITY FOUNDRY,

No. 116 YONGE STREET, TORONTO,

HAS constantly on hand, COOKING, BOX, PARLOR, and COAL STOVES, of various patterns and sizes, very cheap for Cash.

Also, a New Pattern HOT-AIR COOKING STOVE, just received, taking three-feet wood, better adapted for the country than the Burr or any other Stove now in use. It has taken the First Premium at every fair in the United States, where it has been exhibited.

Ploughs, Sugar Kettles, Grist and Saw Mill Castings, Steam Engines, Sleigh Shoes, Dog Irons, and a general assortment of Castings.

Toronto, Jan. 26, 1849.

3

THE CANADIAN AGRICULTURIST.

. Vol. I.

TORONTO, APRIL 2, 1849.

No. 4.

THE CULTIVATION OF FORAGE CROPS.

In a country like Canada, where the winters are not only long, but oftentimes excessively severe, it is a matter of the first importance that the farmer should amply provide himself with the best kinds of provender for sustaining his cattle in a comfortable and thriving condition through that rigorous season. But in order to do this, it is necessary that like the bee, he should make timely provision. The neglect of a few weeks, or even days, in spring, involves the loss of a whole year. And this is particularly the case in our climate; spring being but of short duration, the period for sowing is necessarily restricted within very narrow limits. Hence the necessity of making timely preparation to facilitate the important operations of that season, which to the husbandman is pregnant with interest and hope. In the present paper we propose throwing together a few hints and observations on the culture of the principal forage crops, reserving for future occasions more minute and systematic descriptions of each particular kind.

1. THE TURNIP.—Foremost among root crops, stands the *Swedish turnip*, a vegetable which no farmer ought to be without. Although this plant is subject to severe casualties, arising from the depredation of insects and the influence of the seasons, yet the observance of the following simple rules will be generally found successful.

In preparing the soil for turnips and root crops generally, it is highly desirable to give a deep clean ploughing in the fall, and to make a sufficient number of furrows in the proper directions to take off readily the water arising from the melting of the snow and heavy rains of spring. When farm yard dung is intended as a dressing for these kinds of crops, it is generally preferable to plough it in at this time, particularly if it is what is called long or rough,—that is, in an undecomposed state. The manure thus becomes more readily mixed with the soil, and by the repeated ploughing and harrowing in the spring it is brought into a condition adapted to the wants of the young plant, an object, particularly in a dry season, of very great importance. In more

advanced countries than ours, artificial manures are commonly applied to turnips, such as guano, rape, bone dust, &c. Such dressings are invariably applied in spring, generally in drills with the seed, but not in actual contact with it. As to the precise time and *manner* of sowing, something must always be left to the character of the season, the state of the land; and we may add, in respect to the latter condition, what is often lost sight of by mere theoretical writers, the means and other varying circumstances of the farmer. As we cannot now enter upon particulars, let it suffice to say, that plants cultivated for their roots should be sown as soon as the soil can be properly prepared, that is a deep and fine tilth obtained, and the growing season about fairly commencing. In most northern climates that is a period admitting of considerable variation.—There is danger in being too early in sowing the *Swedish turnip*, since the leaves are liable in particular states of the atmosphere, to become mildewed, and the bulb consequently suffers both in size and nutritive quality. Indeed, the climate of this country is frequently too dry and parching for turnips of any variety, and consequently such soils should be selected for their culture as possess a porous, moist subsoil, containing calcareous and organic matter.

Sowing plenty of good seed in drills from 20 to 24 inches apart, is upon the whole the best mode, as it allows the use of the horse-hoe in keeping the ground free from weeds, and by occasionally stirring the soil the power of capillary attraction is increased, fertilizing gaseous matters are evolved, and as a consequence the growth of the plant is more rapidly advanced. There have been several remedies proposed against the destructive effects of the turnip fly, none of which can in all seasons be depended upon. Thick sowing and the application of quick lime to the plants as soon as the smooth leaves begin to appear, will generally prove successful. Care should be exercised in setting out the turnips in the row about nine or ten inches asunder, when the plants have attained a moderate size, leaving such only to stand as are strong and healthy.

2. MANGEL-WURZEL.—This plant ranks next to

the Swedish turnip in its economical value to the farmer, and being less liable to depredations by insects, its culture is more certain. It has the property of retaining its nutritive qualities for a great length of time when properly preserved; and is an excellent root in spring for cows and young stock, and even for sheep in smaller quantity. Indeed, during the lambing season, mangel-wurzel, owing to the great juiciness of its root and the large amount of saccharine matter it contains, is superior to the Swedish turnip; milk, and not fat, being then required by the ewe for the nourishment of her young. Beet, like cabbage, seems better adapted to the heavier soils than turnips, but the mode of preparation and treatment is very similar. The rows should be at least two feet apart, and the plants set out 12 to 15 inches asunder. On rich soils and in growing seasons these distances would be too small. Frequent culture by horse and hand is required through the period of growth. Earthing up of the plants by means of the double mould-board plough as formerly practised, is not now approved. It has been found in all tap roots rising above the surface of the ground, that earth laid against them causes the growth of lateral fibres, which occasions a bitter taste and deteriorates the nutritive qualities of the root.

3. CARROTS.—This plant is richly deserving cultivation by every man that has only a few acres of ground. The white Belgian variety is recommended for field culture, the tops and roots being much larger than the Orange and Altringham kinds; and on good land under proper cultivation will yield upwards of 20 tons per acre. It is of essential importance in cultivating carrots and other long, fusiform roots, that the soil should be deeply ploughed; in fact it ought be subsoiled to the depth at least of sixteen inches. This operation should be done in the fall, when the dung should be well incorporated with the soil; since with the carrot it has been found, that if the manure in a fresh state come into contact with the root of the plant, a large growth of lateral fibres and a profusion of leaves are sure to be produced. Carrots delight to grow in deep, warm, light loams, resting on a dry and porous subsoil. As the plant is not of very quick growth, it requires to be sown as early as the season and the state of the land will admit. Drills 18 or 20 inches wide will be found sufficient to admit a light horse-hoe; and as soon as the plants are about three inches high, they should be thinned out by hand to the distance of six inches from each other. Carrots are adapted to all kinds of live stock; they are excellent for horses, particularly in early spring before any green forage is ready; they are found to promote a healthy state of the blood and animal

system: and horses having had carrots frequently mixed with their dry food, have seldom been known to go broken winded.

4. PARSNIPS.—What has been said of the cultivation of the carrot, will also apply to the parsnip. The latter, perhaps, will flourish better on a stronger soil than the former; but in either case the ground must be deeply pulverised, and kept clear of weeds. The highly saccharine juice of parsnips renders them very nutritious for all kinds of animals: some exceptions have been urged with regard to horses, but, we think, without any sufficient evidence. For pigs and milch cows they are excellent, giving to the flesh of the former a white colour and fine taste, and to the milk of the latter a peculiar richness, free from any unpleasant flavour, and yielding abundance of the finest butter. It is of importance to observe, that with parsnips in particular, none but *new* seed should be sown, since it frequently happens that old seed will not vegetate. This is one among the many causes of failure in root culture.

CABBAGE.—There are a great many varieties of the genus *Brassica*, but only two or three have been considered adapted to field culture. As the cabbage cannot be so conveniently stored away and preserved as turnips, carrots, potatoes, &c., its cultivation for cattle in a climate like that of Canada must necessarily continue very restricted. Notwithstanding, a small plot of land, well managed, in cabbage, will always be found useful, and may be made remunerative. The best kinds suited to field cultivation, are the large Scottish or Yorkshire, the drumhead, and a variety called the American. These produce large leaves, which in the course of growth collapse, and form an immense dense head. A very hardy variety is cultivated in Germany and the north of Europe, called Kohl-rabi, which, while it produces a root like a turnip, sends forth a large number of stems, bearing leaves like a cabbage. Although the root is far less nutritious than the Swedish turnip, yet, as the plant will resist severe frosts, and bear storing much better than the common cabbage, its cultivation in Canada is well worth a fair trial. All the hardier varieties of the cabbage family, flourish best in soils abounding in clay; but then the ground must be deeply cultivated and well prepared and manured to ensure a heavy crop. Care should be taken to allow sufficient room for the growth of the larger kinds of cabbage; the drills should be from 3 to 3½ feet apart, and the plants 2½ feet asunder: we have seen soils in which these distances might, in favourable seasons, be beneficially increased. The frequent working of the ground, particularly in dry weather, is one of the principal secrets of success, not only in cultivating cabbages, but all kinds of root crops.

6. VETCHES.—*Vicia sativa*, or the common tare,

in a moderate climate like that of the British Islands ranks amongst the foremost of the forage crops. It is adapted to the heavier class of soils; and being generally cultivated for soiling, it is not allowed to ripen its seed, and is consequently less exhausting to the land than most other crops. The spring and winter varieties of this plant have evidently been produced by the different periods of sowing, since the seed of both kinds seems perfectly alike. We strongly recommend, however, that in this country the spring variety only should be used, and that the ground should be thoroughly prepared by ploughing harrowing, &c., that all weeds may be eradicated, and the seed sown as early as possible. If the season be favourable, with proper management, tares will be ready for cutting before clover; and will be found most serviceable, especially for horses and cows. A liberal application of seed is to be recommended; from $2\frac{1}{2}$ to $3\frac{1}{2}$ bushels per acre may be considered ample. It is of importance that the plants should thoroughly cover the ground, that moisture may be retained during the dry season, and weeds prevented from springing up. A thin, patchy crop of tares is one of the greatest misfortunes that could happen to the soil; while a heavy crop is highly ameliorating, by keeping the land clean and restoring back again a large amount of rich manure. Vetches may be made into excellent hay.

7. LUCERNE.—This plant, which has been cultivated from remote antiquity both in Europe and Asia, is richly deserving a sufficient number of experimental trials, with a view to test its adaptation to this country. A dry, deep soil should be selected, thoroughly ploughed and subsoiled, with a liberal dressing of well-rotted dung and lime. As early in spring as the weather and the state of the soil will admit, sow in rows about 18 or 20 inches apart, 10 lbs. of seed to the acre. Carefully keep down all weeds. The crop may be mown as soon as in flower and afterwards kept down by sheep, care being taken not to stock hard or tread the ground when in a wet state. Early in the following spring, the intervals between the rows must be horse or hand hoed, and two or perhaps three light crops may be mown during the summer. It will take three years for the plant to arrive at full perfection. The principal thing to be observed in the cultivation of lucerne is to keep the ground clear of grass and weeds, by occasional hoeings, with an annual top dressing of well-rotted dung, and the application of lime every few years. Treated in this manner, on suitable soils, the plant will continue to flourish for several years, and produce an immense amount of provender.

8. SAINFOIN.—Whether this plant, so extensively cultivated on the chalk downs and dry sands of England and France, could be profitably adopted in

this country, carefully conducted experiments only can decide. It is a plant peculiarly adapted to calcareous soils; its roots deeply penetrate the earth; in rocky soils they extend a prodigious depth among the crevices and open strata in quest of food and moisture. It may be sown like clover, with a crop of grain, 3 or 4 bushels per acre, and it will take two or three years before it arrives at full maturity. Sainfoin makes excellent hay, and affords nutritious pasturage for all kinds of stock. It will not bear such frequent cutting as lucerne. Some prefer mixing white clover with it when sown, as that valuable plant does not interfere with the progress of the sainfoin, and gives a good bottom growth. It would be useless attempting to cultivate sainfoin upon thin wet soils, resting on clay; but on a dry limestone, it is well deserving a trial.

There are several other kinds of plants cultivated in Europe for forage, which our limits will not allow us even to enumerate. Among them may be mentioned *rape*, *artichokes*, *succory*, and the family of *trefoils*—all of which are worth an experimental trial in this country. Since the potato can no longer be depended upon as an article of human food, or for live stock, it becomes most important to ascertain what other roots can be raised as its substitute. Clover and timothy, which are naturally so well adapted to the soil and climate of this country, will no doubt continue to constitute the principal food of horses and cattle; yet it must be acknowledged, that to increase the variety as well as the annual bulk of provender, would be a most desirable and valuable acquisition. We would caution individuals against making experiments on a large scale, and against drawing general conclusions from single cases either of failure or success. Truth can be elicited only by repeated trials, performed under all the various conditions of soil and climate. The neglect of this simple rule has occasioned many false and hasty conclusions. We strongly recommend this subject to the best consideration of our agricultural societies, and shall always be happy to open our pages for communicating results.

PLANTING HOPS.

We submit the following directions for making a hop-garden to an agricultural correspondent who signs himself "*A Canadian*," in the hope that they may be useful not only to him, but to others also, who contemplate the cultivation of that plant. We may on some future occasion treat of the natural history of the hop, its varieties, expense, and modes of culture, &c., as practised in England. The cultivation of hops in Canada must necessarily continue restricted, since the demand is small, and the requisite

number of hands for gathering them can only be obtained in particular localities. This country, however, ought at least to supply its own wants, instead of importing large quantities, as has been hitherto the case, from the United States. Whether the British market will offer sufficient inducement for our farmers to raise hops for exportation, is a matter at present purely problematical. The contemplated extinction of the excise laws and duty would probably place hops in the same category as corn—open to a free competition with all nations; yet the low prices that have been obtained of late years in England for this article, seem to warrant no encouraging expectation of our being able to engage in a profitable exportation.

The soils best adapted to the growth of hops are such as are deep and rich in organic matter, resting on moist porous subsoils; yet they must not be wet, as that is a condition the most unfriendly to this plant. The hop delights in a soil containing a large percentage of lime—usually termed calcareous—on a dry alluvium, where the subsoil is kept cool and moist by a running stream, the hop will luxuriate. It is of importance that land intended for hops should be deeply cultivated and cleared of weeds previous to planting. It would be useless to attempt to grow hops on exhausted land without the best cultivation and heavy dressings of rich farm yard manure.

Having properly prepared the land by repeated ploughing and harrowing, the next thing is to mark out correctly at regular distances the hills or spaces where the cuttings are to be planted. This is a matter of considerable importance, as when hops are planted in straight rows at right angles with each other, not only is the cultivation by the plough or horse-hoe, rendered more easy and effective, but what is also of equal or even of greater moment—a regular supply of light and air is enabled to reach the growing plants. The hills should be from 6 to 7 feet apart. To mark out these spots accurately take a long line made of strong string and at every six or seven feet, according to the distance determined on, fasten a feather or a piece of coloured worsted. When the line is stretched out, short sticks are to be inserted in the ground under these marks, which thus denote the exact place in which the plants are to be placed. It is difficult to give precise verbal directions as to the "setting out" as it is termed, but stretching the line in opposite directions near the centre of the field a square consisting of a number of sticks may be formed, and by careful attention, the whole of the field may be then marked out before beginning to plant. From ten to twelve hundred hills will stand upon an acre.

Planting should be done as early in spring as the

season will admit. Cuttings should be obtained from young plantations, and each cutting ought to have two joints of buds, and should be planted in as fresh a state as possible. Three or four cuttings should be planted by means of a dibble in each hill, within the circumference of 12 or 15 inches, the earth well pressed against the plants. The application of dung, unless thoroughly mixed with the soil, is not to be recommended for planting in, as in dry weather it would tend to retard rather than promote the vital energies of the plant.

As soon as the bines (vines) get about two feet high, they must be tied to short poles previously fixed in the ground by means of a sharp iron crow bar. In the second year poles of a larger size will be required—two or three to a hill. It is frequently found injurious to the strength of young hops to use too large poles the first and second years.—The circumference of poles, as well as their length, should be considered in adapting them to the strength and capabilities of the soil and plant. In this country, cedar, in point of form and quality, is the best wood for hop-poles, which may be cut from 14 to 16 or 17 feet long, according to circumstances. It is most desirable to use poles of a pretty uniform length in the same plantation, otherwise some plants will be shaded by others and the demand upon the roots will be unequal.

In case of springs or stagnant water, under-draining to a sufficient depth to dry the land is in hop grounds absolutely essential. Water furrows should be made on the surface before winter sets in, which will very much facilitate the exit of water in spring. Hops require frequent manuring, farm yard-dung being the most available kind in this country.—Lime applied occasionally to soils not naturally rich in that mineral will be found highly beneficial. It is a principle in hop-culture, as in all row crops that the ground be frequently stirred during the period of growth, and kept perfectly clear of weeds.

ON THE APPLICATION OF SCIENCE TO AGRICULTURE.

NO. IV.

COMPOSITION OF SOILS.

It was stated in a previous paper, that soils generally have been formed from the abrasion of the rocks on which they repose. This is the case in regard to the *earthy* matter of soils, which has been produced by the action of water, air, frost, &c., upon the subjacent rocks, causing a disintegration or crumbling down of previously existing materials. Extensive accumulations, however, called *drifts*, are frequently found on the earth's surface, bearing evident marks of having been washed down or other-

wise transported by water or other agents from great distances. Large fragments of rock or boulders frequently occur among the finer particles of such soils, which will generally enable the careful observer to determine the direction from which the drifted materials have come, and the very formations from which they were disintegrated. These considerations throw considerable light on the causes which have produced such great variety in the *inorganic* constituents or mineralogical character of soils.

The *organic* matter which is found in variable quantities in all fertile soils, has been derived from vegetable and animal substances—more particularly the former—which, undergoing decomposition after life has become extinct, are intimately mixed with the soil, and constitute the principal cause of its productiveness. A due proportion, however, of the organic and inorganic constituents is necessary in all soils, to adapt them to different crops, and to raise them to the highest state of fertility. From one to sixty or seventy per cent. of organic matter is to be found in most cultivated soils. The latter is an excess formed on boggy or peaty soils, which require the admixture of marl, clay and other inorganic substances, before they can be profitably cultivated. With less than one per cent. of organic matter, a healthy vegetation could not be sustained. It has been calculated that oats and rye will grow and produce a scanty crop on a soil containing one or one and a half per cent. of organic matter—barley, when two or three per cent. is present; but it may be stated that in general a good yielding soil for most kinds of grain crops, particularly for wheat, must contain from eight to ten per cent. of decayed animal and vegetable matter. It should be remembered, however, that it is not any definite amount of mere organic matter in a soil which *alone* constitutes its fertility.

The *inorganic* constituents of soils deserve particular attention, as they perform an essential part in the economy of vegetation. We shall notice more fully hereafter the nature of these substances. All soils may be readily separated into three principal parts. 1. That which consists of coarse gravel and sand, comprising fragments of flint, limestone, &c., with an occasional and variable amount of undecomposed vegetable matter. 2. Finely comminuted sand, denominated by chemists, *silex*. 3. A portion consisting of very fine powder, hence called “impalpable matter,” and consisting generally of the following substances, in variable proportions: (1). *Aluminous earth*, or clay in a state of admixture with other earthy materials, a substance that gives to soils their tenacity and capability of holding water, and constitutes the chief value of clay for the pur-

poses of pottery. (2). All decomposed *organic* matter, whether of vegetable or animal origin: chemists have given to this substance the name of *humus*, which, combining with oxygen, forms *humic acid*, which, again uniting with lime and other earths, forms what are designated *humates*;—these latter compounds are supposed to perform an important part in the economy of vegetation, yielding up their carbon to supply the wants of the growing plant, although there is good reason to believe that the principal supply of carbon is derived from the atmosphere. (3). *Silica*, which is a compound earthy substance, formed by the union of an element, *silicon* with oxygen. It occurs in a pure form in quartz rock. The difference between the silica of the impalpable matter, and the *silex* or sand, previously mentioned, is simply that the one is crystallised and the other not. *Silica* occurs in nature under different forms, thus adapting itself to the different purposes of the living plant. United with potash, it forms that important and useful compound, the silicate of potash, which gives strength and smoothness to the cuticle of the stem of wheat and other cereals—a fact which every intelligent practical farmer will understand and appreciate. (4). A variety of salts, of which the principal are the following: Carbonates of lime (chalk, common limestones, marl, &c.), magnesia, potash, soda, muriate of soda (common salt), and sulphate of lime or gypsum. All these ingredients are more or less found in the ashes of plants, as well as in soils; and they perform important purposes in the nutrition of animals, whose chief support is derived from the vegetable kingdom. For instance, lime is necessary to form bone in the animal, and to give hardness and strength to the shell of an egg; while soda and potash promote bile, and the muriate of soda, that nourishing substance, milk. There are a few other substances not enumerated above, that sometimes occur in soils in small quantities. Oxide of iron, which is an essential element in the blood of animals, is found in variable proportions; and animal matter, so rich in nitrogen, occurs in all surface soils that are not absolutely sterile.

Most cultivated soils contain from 90 to 96 per cent. of their whole weight, when free from water, of inorganic materials. In peat, and the rich forest soils of this continent, the organic matter of course bears a much higher proportion. Now, this earthy part consists principally of three ingredients. 1. *Silica*, or sand and gravel, of various degrees of fineness. 2. *Alumina*, or clay, occurring generally in shaly or slaty masses, more or less indurated and intermingled with the soil. 3. *Lime*, occurring as a carbonate, sulphate, or phosphate, in the various rocks and marls that are found near the surface

of the ground. In proportion to the preponderance of any one of these three substances, a soil is said to be light, stiff or calcareous.

It is of importance to observe, that by a clay soil is not meant a *pure* clay, since no such soils occur in nature. Even the *porcelain clays*, which are the richest in alumina, and occur merely in small patches, contain only from 42 to 48 per cent. of that earth; the remainder consisting of silica. Soils containing 25 or 30 per cent. of alumina, are found generally too heavy for profitable cultivation, and are best adapted to the purposes of pasturage. It may be further observed, that soils contain the three substances above mentioned, in a state of *mechanical mixture*. With silica and lime, this is always the case, but in the clays, which principally consist of silica and alumina, these materials are united by *chemical combination*. On a knowledge of these proportions, the following classification and nomenclature are founded, as given by Professor Johnston. We have had frequent opportunities of testing the advantages and correctness of this arrangement for practical purposes.

1. *Pure clay* (pipe-clay) is composed of about 60 of silica and 40 of alumina and oxide of iron, chiefly in a state of chemical combination. Such soils rarely occur but in small patches, and are wholly unfit for agricultural purposes.

2. *Strongest clay soil*, consists of pure clay mixed with 5 to 20 per cent. of a siliceous sand, which readily separates by boiling and decantation. This soil is of a very unctuous nature, exceedingly stubborn, and affords a good material for making tiles.

3. A *clay loam* contains from 30 to 40 per cent. of fine sand, which may be separated by washing. This admixture renders such a soil more open and friable, and consequently more easily cultivated. When from 40 to 70 per cent. of sand can be separated by mechanical washing, it is called a *loamy soil*; from 70 to 90 per cent. of sand, it is termed a *sandy loam*; and when no more than 10 per cent. of pure clay remains, it is considered a *sandy soil*.

"The mode of examining, with the view of naming soils as above, is very simple. It is only necessary to spread a weighed quantity of the soil in a thin layer upon writing-paper, and to dry it for an hour or two in an oven or upon a hot plate, the heat of which is not sufficient to discolour the paper—the loss of weight gives the water it contained. While this is drying, a second weighed portion may be boiled or otherwise thoroughly incorporated with water, and the whole then poured into a vessel, in which the heavy sandy parts are allowed to subside until the fine clay is beginning to settle also. This point must be carefully watched, the liquid then poured off, the sand collected, dried as before upon paper, and again weighed. This weight is the quantity of sand in the known weight of *moist* soil,

which by the previous experiment has been found to contain a certain quantity of water."

Hitherto we have considered only the clay and sand contained in a soil, while lime is found more or less in all soils that will pay for cultivation—hence we have

4. *Marly soils*, which when dried are found to contain from 5 to 20 per cent. of lime. The mechanical properties of the marl depend upon the relative amount of silica and alumina it contains. Hence we have a sandy, loamy or clay marl. The value of marl as a fertilizer, does not wholly depend on its percentage of lime; if it abounds in alumina, it would be beneficial on a loose sandy soil, independent of the lime as a mere *mechanical mixture*; while sandy marl would in the same manner be serviceable to heavy clays.

5. *Calcareous soils* are so denominated in consequence of having upwards of 20 per cent. of lime. When they contain a sufficient amount of clay to render them what is technically called "good holding land," they constitute the best soils for most agricultural purposes. Professor Johnston gives the following simple directions for determining the amount of lime in a soil, when it exceeds 5 per cent:

"To 100 grains of the *dry* soil diffused through half a pint of cold water, add half a wine glass full of muriatic acid (spirit of salt), stir it occasionally during the day, and let it stand over night to settle. Pour off the clear liquor in the morning, and fill up the vessel with water, to wash away the excess of acid. When the water is again clear pour it off, dry the soil and weigh it; the loss will amount generally to about one per cent. more than the quantity of lime present. The result will be sufficiently near, however, for the purposes of classification. If the loss exceed 5 grains from 100 of the dry soil, it may be classed among the marls, if more than 20 grains, among the calcareous soils."

6. *Vegetable moulds*, which vary much in their texture and composition—from the rich garden mould, containing 8 to 12 per cent. of organic matter, to the peaty soils, having 58 to 70 per cent. together with very different proportions of clay and sand. To determine the amount of vegetable matter in these soils, for the purposes of classification, is a very simple process. First dry the soil in an oven, and weigh it; then heat it gradually to a dull redness over a lamp or fire, till all the combustible matter is consumed. Again weigh it; the loss will be the amount of organic matter.

SHORT-HORNS IN CANADA.

We have been favored with the particulars of weight, &c., of the Hon. Adam Fergusson's splendid short-horn heifer, *Blossom*, which was purchased and slaughtered last Christmas, by Mr. Philip Armstrong of this city. It will be recollected by seve-

ral of our readers, that *Blossom* was intended for exhibition at the last Provincial Show, at Cobourg; but in consequence of the injuries she received in the boat coming from Hamilton, arising from the extreme roughness of the weather, it was deemed inexpedient to take her any farther. *Blossom* was bred and fed by Mr. Fergusson, of Woodhill, who has been so honourably distinguished for a great number of years for his zealous and successful exertions in improving the live stock of this Province, and the advancement of its agriculture. When we look at what has been done and what is doing by an enterprising farmer scattered here and there, we fondly cherish the hope that the time is fast drawing nigh, when Upper Canada will be awakened to a perception of her great natural capabilities. The subjoined facts will show that among many other advantages, our country is well adapted to the improved breeds of stock:—

Marketable beef, - - - - -	1,249 lbs.
Tallow, - - - - -	215 "
Hide, - - - - -	95 "

Blossom's total weight, - - - - - 1,559 "

Or 111 stone 5 lbs., at 14 lbs. per stone.

We will only observe, in addition to the subjoined extract from the *American Herd Book*, that the quality of the meat was unanimously pronounced by Mr. Armstrong's customers, to be of the finest description.

"*Blossom*.—White, bred by and the property of Hon. Adam Fergusson, Woodhill, near Watertown, Canada West; calved 16th August, 1843; got by Strathmore out of Beauty, by Snowball (2647), by Lawnsleeves (365), by Mr. Mason's Charles (127)."

NEW SETTLEMENTS.

LIFE IN THE BUSH.

GENTLEMEN,—I enclose the sum of 5s. as my subscription for the *Canadian Agriculturist*, during the current year.

This portion of Canada is of comparatively recent settlement, and the progress of practical agriculture has hardly extended beyond the first rude efforts to clear land for the purpose solely of sustaining animal life. Nevertheless, there are instances—and not a few—where an economical expenditure of labour has been succeeded by the most gratifying result.

During the month of December last, when in the discharge of the duties of my office, I inspected four lots of land, adjoining each other, in the township of Glenelg, which were located by Mr. J. Leadingham and his three sons. They commenced operations in the spring of 1847, and at the time referred to they had upwards of fifty acres under crop and well fenced. Their barn—considering the almost total failure of spring wheat—was well replenished. Their stock of cattle, which was very considerable, had comfortable shelter. Their dwelling—a rude shanty—was clean, well-ordered, and each article of

furniture was a specimen of the mechanism of the back-woods; and their table, in addition to substantial, was supplied with jellies and preserves. The chief—the most interesting feature in the subject matter of this reference, is the fact, that these things were the products, under providential arrangements, of their own labour, expended in converting the forest into a fruitful field. Labour, is necessary to human enjoyment.

Yours respectfully,

GEORGE JACKSON.

Bentineck, March, 1849.

FENCE-MAKING—A NEW PLAN.

MESSRS. EDITORS—I beg to offer a few suggestions with reference to the construction of a cheap and durable kind of fence. In most parts of Canada where timber is plenty, the common zig-zag rail fence answers the settler for a few years, but as is already the case in some districts where timber has become scarce, some other mode of fencing our farms may be resorted to with advantage.

Where the soil is of stiff clay, the following plan possesses some advantages on account of its durability and cheapness. It consists merely of two parallel ditches, with a ridge of earth piled between them: small posts, (usually cedar,) five feet long and from six to eight inches in diameter, are set about six inches in the ground and ten feet apart, in a line where the ridge is intended to be raised; the ditches are then dug about two feet deep and three feet apart, the sides of which are of such a slope as to be capable of producing a tolerably stiff sod from being sown with grass seed. The ridge, which is raised about 2½ feet high, should, like the ditches, be sloped on each side, so as to admit either of a covering of sods directly or of being produced by seeding. It may be remarked here, that it is important that the work be performed in the spring of the year, when it can not only be done cheaper but rendered less liable to sustain injury from the frosts of the ensuing winter, than if accomplished at a later period. On the posts, which will remain uncovered about two feet, are nailed two boards, one on the top and the other on one side, when the fence will be complete. The advantages of this kind of fence over a board fence are considerable. First, it effects a great saving of timber; secondly, in low or wet land it answers the double purpose of a fence and drain; finally, it is more permanent, as the posts are less liable to be raised by the frost than those of an ordinary board fence, the earth in which they stand being kept comparatively dry by the ditches, and placed around them in an oval form, will naturally incline from them as the frost works its way under the surface.

I am aware that some farmers will say that "It appears all very well on paper," but I can assure such that fences of this description have been in use in this District for the last four or five years, and thus far show strong evidence of their ultimate utility.

I have not as yet had any constructed on my own farm, and cannot therefore say from experience what would be the expence of such a fence, but am credibly informed that it need not exceed two shillings per rod. But this fence, like many other things that are well adapted to the requirements of

some farms, might prove worse than useless to others. The farmer, before adopting it extensively, had better try it on a small scale—construct it with care and judgment, so that the trial may be a *fair one*. The slope of the ditches should depend in a great measure on the stiffness of the soil of which it is composed, and of course their depth and the height of the ridge will be greater or less as they are more or less slanting.

Near the village of Oshawa may be seen some of the fences alluded to, which have given such general satisfaction that they are becoming more generally adopted in that section of country: the soil is clay with a slight mixture of gravel. Very light or sandy soils would be ill adapted to such a purpose.

Yours, &c.

PRACTICE.

Whitby, March, 1849.

EXTRACT FROM L. F. ALLEN'S VALEDICTORY ADDRESS BEFORE NEW YORK AGRICULTURAL SOCIETY, JAN. 10th, 1849.—Among the benefits arising from well directed Agricultural education, aside from spreading the requisite learning and intelligence applicable to the chief pursuit of our people, deep and broad among them, the retention of that portion of active capital, acquired by the industry of our Agricultural population, among themselves, would be one important consequence. In place of the prevailing and mistaken notion that monied capital invested in agriculture is either unproductive, or less so than in other pursuits, our farmers would be taught that, coupled with the knowledge to direct it, no branch of our national industry is so steadily remunerating as that connected with the soil—a fact now practically disbelieved; or why would such amounts of monied capital be continually drawn from the agricultural districts to your commercial cities, to be embarked in hazardous enterprises, or doubtful investments? The merchant, or the speculator may fail—and fail he does, very often—and in his downfall is often buried the toils of a long life of patient industry. But who ever knew a good farmer, of prudent habits to fail? Nay, who did not, with an exemption from extraordinary ills in life, ultimately grow rich, and discharge meantime, all the duties of a good citizen? I concede to you the many prominent cases which exist, of wealth rapidly accumulated by bold and successful speculation; of fortunate, perhaps accidental adventure; of hoards heaped up by a long course of perseverance in trade, directed by that intuitive sagacity of which but few among us all are endowed, and which so dazzlingly invite our imitation. Yet these are but a few glaring instances, standing out in bold relief among the many who have sunk in the same career, perhaps with a ruined peace; happy afterwards to retire, were it in their power, upon the limited possession which they had thrown away, to commence their wasting strife upon the broad sea of adventure.

A second advantage would be, that it would invite, annually, a large class of educated men of capital from our cities, to invest a portion of their wealth in our farms, convinced by the knowledge acquired in a course of agricultural education, that Husbandry was a good business, and intending to pursue it as the occupation of their lives, it would cause a reflux of that capital and population which had been drawn away from agriculture. Nor would such associations among us detract from the industrious habits of our farmers by their example. They, by the possession of larger estates than we enjoy, might give more of their time to leisure than we are accustomed to spend; but they

must, if good farmers, attend to the daily routine of their affairs, as well as we. They would diffuse intelligence among us; introduce improved implements, seeds, and stock; and in time, surely exalt the character of our husbandry. They might not, indeed, work at the muck heap, nor guide the plow with their own hands; but they must be capable, from education, to direct the labor of both; for we must not forget that the merchant who, from his luxurious counting room, plans his voyages, and directs the course of his ships; or the engineer who projects the rail-way, or the ocean steamer, once performed the duties of a shop boy, or hammered at the anvil. And thus with the farmer: he should be capable of directing the cultivation of the soil to its greatest possible extent of production; and he will find that, in achieving such result, all the powers of his mind, and the knowledge with which it is stored, will be required.

This thought will bear a little examination. The farmer is apt to think that the professional man, or the merchant, lives an easy and luxurious life. In many instances their families may do so; but with the eminent and successful man of law, or science—the artisan, or merchant himself, such supposition is a great mistake. There are not, under heaven, a more laborious class of men than these. Labor of body, and of mind is theirs—and that incessant. See them early, late; in season, and out of season—their whole energies devoted to their several callings, without rest, or intermission—and far too frequently, to the premature wasting of life itself. It is no wonder that such industry, directed by good education, (and by this term I mean the entire training of the boy to manhood in its most extended sense,) and stimulated by laudable ambition, should lead to success. Yet with all these appliances, the labors of such men are often disastrous; and if not so, after a life of anxiety, their toils too frequently end with but the means of a slender support.—Compared with these, the toils of the farmer are light. Physical labor he endures, it is true, and often times severe labor, but his mind is easy. He enjoys sound rest, and high health. He has much leisure; in many cases more than is for his good. He has abundant time to discuss politics, law, religion—everything, in fact, but what relates to his own profession, on which subject, I lament to say, his mind seems less exercised than on almost any other. Now, let the same early education be given to the young farmer of an equally acute intellect that is given to him who chooses professional, mechanical, or mercantile pursuits—education each in his own line. Let them start fair. Apply the same thought, investigation, energy, and toil, each in his particular sphere, and beyond all question agriculture will, in the aggregate, have the advantage—and for this reason, if no other: there are few contingencies connected with agriculture. Its basis is the solid earth, stamped with the Divine promise, that while it remains, seed-time and harvest shall continue; while commerce, and trade; mechanics, and arts are liable to extraordinary and continual accident. Look at the devastations by flood, and fire—of ship, and cargo, upon ocean, lake, and sea, and river; conflagrations in your towns and cities; and the thousand other casualties which almost daily occur—all which are a dead sink upon labor and capital not agricultural, and the risks of the husbandman are scarce one to ten, in the comparison. Rely upon it, Farmers, you are on the safe side.

But, I hear some one remark, "Why, if agriculture, through the improved education proposed, holds out such alluring advantages, all our young men will rush into it, and competition will destroy it." Not the slightest danger. Our young men are already running into the other trades and professions, where competition is ruinous; and all we ask, is the opportunity to

get a share of them back again. Besides, there is no fear that the other avenues of industry will not be filled; for, in the constitution of our natures, there will always be enough unquiet spirits born into the world which the farm cannot hold, to keep the bustling part of it in motion.

Another, and a prominent advantage which we should receive from good agricultural education, would be, that of more stability of character in our farming population. It is proverbial among traveled foreigners in this country, and it would be a subject of wonder among our staid people at home—if an American could wonder at anything—that we are the most changing people in the world. We, as a population, have few, scarce any, local attachments. This, to an extent, is a true, although a severe censure. It arises, no doubt—and naturally enough, too—from the wide extent of national domain of which we are the possessors, and from the natural sterility of much of the soil in our older communities, which cause an effort, and a laudable one, too, to better their condition in our rural population. But more, I imagine, from the low standard of agricultural improvement, and a mistaken estimate of the value of the soil, and its application to the products which properly belong to it. But, no matter what the cause. The fact is so, and it is a defect in our national character. How many among us but will, with a slight tempting offer, sell his homestead without remorse, break up the cherished associations of his life—turn his back upon the graves of his kindred, and his children—his birth-spot—the old hearth-stones of his boyhood—his family altar, and even the brave old trees, which have, life-long, waved their branches over his childish sports, and shadowed his innocent slumbers when weary of his play, all—all, pass out of his hands, like a plaything of yesterday, unwept and unregretted, for the fancied advantage of a fresh spot in a strange and a newer land.

REPORT OF WILLIAM HAWKES, ESQUIRE, ON MAKING AND SAVING MANURE.

Black River, October 11th, 1848.

To the President of the St. John Agricultural Society.

SIR,—As your Society has offered a premium for the best report on making and saving manure, I will tell you my own experience in the matter, not to get the premium, but for the purpose of assisting you in your efforts for the improvement of farming among us, of which, I must say, there is great need. I have often been filled with pain at seeing the poor cattle shivering in their stalls, in barns where they are exposed to every wind that blew, and the manure thrown out of a hole in the wall, there to lie, and have all the good washed out of it, not only by the rain, but by the dripping from the roof; and this, I am sorry to say, is a true picture of nine out of ten of all the barns in the country which I have seen.

Now, I will venture to say, that no farmer, however humble his circumstances, but might keep his cattle on far less feed, and double the value of his manure, by merely placing the cattle, with their heads inwards, on the south side of his barn, with close boarding before and over them, and then, throwing over the manure a shed, ten feet wide, covered with slabs, or spruce bark, if shingles cannot be afforded.

I followed the fashion of the country when I first began farming, but found that my cattle took the horn distemper, and would not thrive as I thought they should. My manure was also mixed in winter with layers of snow, and all the substance was washed out of it in Spring, so I did not perceive the land to be much the better for it. I tired of this, and saw that I must either change my plan, or give up farming.

I therefore built a barn on the following plan. It measures 36 by 26 feet, and fronts to the South, with large doors at both ends, and a passage running along the south side. On that side the land falls away, so I brought the roof close down to the ground. By doing this I got breadth enough for a cow-house, and a manure-house behind. The cows stand with their heads to the barn, and I feed them from the thrashing floor. I sank the floor of the manure-house considerably, and left it open at each end, so that I can drive a team right through. My manure never freezes now, and my cattle being made comfortable, thrive in a way they never did before.

As I have found that turnips and carrots can be raised to advantage in this country, I intend to make a root-cellar in the middle of my barn, about five feet deep. I think the turnips will keep there, if well covered with straw, and they will be at hand for feeding the cattle.

I have this year a compost heap of the following dimensions—fifty-six feet long, thirty-three feet broad, and five feet high. It is composed of 136 loads of green seaweed, with about the same quantity of black bog-earth, and as much good vegetable mould; the two last mentioned I mixed together. I placed this and the seaweed, in alternate layers, of eighteen inches, and find that it heated, until the whole became one mass of very beneficial manure.

Wishing the Society the success it so well deserves;

I am Your Obedient Servant,

WILLIAM HAWKES.

POTATO DISEASE.—The potato disease being a subject of such universal and paramount importance, it is nothing more than right that any little experiments which may have been tried upon the suggestions, from the failure in the crops of preceeding years, should be publicly communicated. It was presumed by many last year, that the failure might be owing to a degeneracy in the vegetable life of the fruit, from its being continually replanted from year to year; and by some theorists this circumstance was stated to be the cause of the disease, and they recommended as an obviating mean, that the seed in the apple of the potato should be planted, so as to rear a fresh stock. This suggestion has been submitted to an experiment by a gentleman in Coleford this year, and the result is as follows:—In April he sowed the seed, it grew and the haulm looked perfectly healthy, and flourished well, until about the latter end of August, when considerable symptoms of the disease appeared, and all at once the haulms went perfectly dead and rotten; on digging up the potatoes every one was in a pulp of putrescence. So much for sowing the seed. Last year the same gentleman amalgamated salt with the soil and planted the potatoes in it, the result was a plentiful crop, but small in size, this year he adopted the same plan, and a total failure in the produce has been the consequence. He also last year set off a portion of ground where he well mixed in lime and soot, a good average was then reared in a healthy condition—and this year, from the same process, all were diseased. I have read from the accounts this year that in well manured land the disease has proved to be greater than in a less rich soil—this does not hold good here, for I have known several patches of meadow land that have been fresh dug up this year and planted without having been manured at all, and a general failure in the crops has been the result—and *vice versa*. Now from all these conflicting circumstances, no definite conclusion can possibly be derived. We see the same soil rearing a tolerable crop one year, and failing in the next—rich soil and poor soil at equal disadvantages. About a month after the potatoes were planted this year, a week of excessive hot weather came in, then much rain and a considera-

ble lower temperature, then followed again a few hot days, and shortly after the disease was observed in the haulm, herein I think lies the secret.—*Atmospheric change* is the potatoe de-Vastator. It is with deep regret we announce that the later crops of potatoes here have turned out on an average, to be only about half good. It is a singular fact that the potatoe should be the only bulbous rooted vegetable afflicted, we find the artichoke, turnip, carrot, and parsnip, and the roots of the dahlia and other globular rooted flowers appear to be sound and healthy in structure, and remarkably fine this year.—*English Paper.*

MR. INGLEDEW'S REPORT ON TURNIP CULTIVATION.—The mode which I adopt in the cultivation of turnips is as follows:—I take land from which I had previously taken a crop of oats, without manure, from sward; this I plough over in the Fall. In Spring, I plough across, and harrow thoroughly. I then run out drills two feet apart, into which I put thirty double horse-loads of barn manure to the acre; this I cover about two inches by opening new drills. On the top of these drills, after being a little flattened, I sow about $1\frac{1}{2}$ lbs. of seed per acre, with a seed sower,—if by hand, a small opening must be made for the seed with a hoe. The seed should be sown when the land is dry, and shortly before rain, if possible. I have found the best time of sowing to be from 5th to 20th June. The best remedy I have found for the fly is thick sowing, although I understand that if bran be sown on the young turnips when wet with dew, they will suffer less. So soon as weeds appear I pass a cultivator between each drill. When the plants put forth the rough leaf, which is generally about the tenth day after sowing, I pass along the drills with a hoe, striking out all but two plants in each six inches. About ten days after, I thin out to six inches, filling up vacancies with the plants thus drawn. *On the last thinning depends much of the future growth.* It is done with both hoe and hand, the tops of the drills being nearly levelled, and the soil being well cleared away from the plant leaving the tap-root only in the ground. If the earth was not well cleared away from the turnip, it would not attain half its size, besides being more liable to be injured by grubs and worms. After this operation, the young plants will fall down and appear to wilt, but the inexperienced need not be discouraged, as in a few days they will start again with fresh vigour.

They may now be left to themselves for some weeks, until they begin to crowd, when they should be thinned to twelve inches apart—the drawn turnips affording an excellent food for cows, hogs, &c., as well as for market purposes. The hoe should then be drawn through between every plant and the cultivator passed up the drills. A light furrow might also be opened with a plough to carry off the water. They will seldom require more.

The expense of cultivating an acre of turnips after this mode, may be summed up thus:

Ploughing, Harrowing, and Drilling—	
4 days, at 15s.....	£3 0 0
Manure, carting & spreading,	9 0 0
Cultivation, one day in all,...	0 10 0
Hoeing and weeding,.....	0 15 0
	—£13 5 0

I estimate the turnips as worth, on the ground, 1s. per bushel, which is, 640 bushels,.....£32 0 0

—leaving nett profit,.....£18 15 0

—besides having two months' valuable feeding from the drawn turnips and tops.

Carrots are cultivated much after the same manner, with the exception that the land ought to have another ploughing, and about ten loads more of manure. The

hand is also to be used instead of the hoe in weeding and thinning.—*From the St. John Agricultural Society's Report for 1848.*

SMALL LOTS.—The editor of the Haverhill Gazette gives a very good and profitable account of a quarter of an acre of land, and says:

"We are great friends to manufacturers, that we may have something to send abroad to purchase the produce of the South and West; but after all we consider our own agriculture to be the solid foundation of our prosperity, and a few people are so much engaged in other employments that they cannot do something to increase the sum total of agricultural produce. A good garden does much to supply the wants of a family.

An orchard is an ornament—its fruit is a great luxury, and affords a great deal of nourishing food, and few enterprises and more profitable than cultivating fruit trees. Every traveller from here to Newburyport may see an orchard of a *quarter of an acre* by the side of the road, for which two hundred dollars have been offered and refused, and for the fruit of which a single harvest, as it hung upon the trees, sixty dollars have been paid. We can show the lot of one-fourth of an acre, which affords space for a comfortable cottage, an abundance of garden vegetables, eight or ten bushels of potatoes, and six bushels of Indian corn for a year's crop."

BENEFITS OF AGRICULTURAL SOCIETIES.—We have often remarked, says the Albany Cultivator, that the great benefit of agricultural associations, is the opportunity they afford for bringing together the people, with their animals, articles and products, by which all may be compared and the particular improvements possessed by each may be seen and adopted. Mr. Fletcher, in his address before the Windsor (Vt.) Agricultural Society, in speaking of their exhibitions says:—"It is very desirable that every improvement in husbandry, and the most successful systems of agriculture, which are known to but a few comparatively, should be generally known and universally adopted.—Here, the best agricultural products are exhibited, as an example and incitement. Here, we have an opportunity of viewing and comparing, the best of our flocks, and herds, of different breeds, to ascertain their relative value; and here, are exhibited, the most improved, the best specimens of agricultural implements. There, we see the rapid improvement in the mechanic arts, the handmaid of agriculture. Here, we may see the difference between the limb of a tree for a plow beam, with a knot to it for a coultter and share, and the fine plow of the present day. Here, we may learn from the modern implements how to save time and strength, and accomplish a greater amount of work. Here, the farmers of the county assemble once a year; become acquainted, promote kindly feelings; converse freely with each other, on those subjects most interesting to them. What can be better calculated to teach us to do well?"

ON THE PREPARATION OF CATTLE FOOD.—At the recent Smithfield Cattle Show, I promised to afford early and definite information relative to an experiment at Trimmingham between eight Scots, one-half fed, with boiled linseed, the other with raw.

Assured that you will readily afford the medium of your paper, I beg to state, that the bullocks, after three months feeding, were submitted to public inspection at North Walsham, on Thursday last, and that the superiority was awarded to the raw feed, by a great majority of farmers.

But, admitting the fattening properties of both systems to be equal, the cold must possess the greater advantages:—1st, because firing is dispensed with,—

2ndly, because the mixture does not turn sour,—and 3rdly, because the cattle eat it without waste.

It is my intention to continue the experiment until the animals are ready for market, but with respect to the rest of my cattle, I shall substitute the cold for the hot food.

The object of either process is to form the linseed into gelatine, and to incorporate it with any substance, or fibrous material, that will act as a vehicle to the stomach, and as a reconveyance to the mouth for rumination.

Gelatine, proper for cattle feeding, is obtained either by boiling linseed reduced to fine meal 5 or 10 minutes; or by soaking it 25 or 30 hours in cold water.

The method of making the cold compound with which the bullocks in question are fed, is precisely the same as that described for hot in page 234 first edition of my book, and in 245 of the second, viz:—

The half of a large tub being conveniently placed, a bushel of pea-straw, &c., or hay and turnip-tops cut into chaff, is put in. Two or three hand-cups-full of jelly are poured upon it, and stirred up with a three-pronged fork. Another bushel of the turnip-tops, chaff, &c., is next added, and two or three cups of the gelatine as before; all of which are then expeditiously stirred and worked together with the fork, and a rammer. It is then pressed down as firmly as the nature of the mixture will allow, with the latter instrument, which completes the first layer. Similar quantities of the turnip-top-chaff, &c., are thrown into the tub, the jelly poured upon it, and so on till the copper or vessel in which the gelatine was formed, is emptied. The mass is lastly pressed down with a copper lid, and in a few hours, the chaff having absorbed the mucilage, the compound is given to the cattle three or four times in addition to as many turnips as they like to eat. The proportion, up to this date, has been one pail full of linseed meal to eight of water. Next month it will be one to seven, with about two pints of barley or pea-meal added by degrees while the compound is being made. Afterwards more linseed and barley will be used. By this means the present cost of eighteen-pence a head per week for the artificial ingredients, will be increased to about half-a-crown.

In adhering to these regulations, I have never failed to obtain ample remuneration for grazing, independent of the box manure, which is beyond price.

I exhibited also at North Walsham, a Dutch heifer that cost £8 10s. a short time before last Christmas. She was fed according to the above system, at the rate of two shillings and three-pence per week for linseed till June, when an unlimited quantity compounded with grass pulse, grain, or turnips, was daily placed before her. During this time, however, she consumed on the average only 30 pints of linseed, and 35 of barley or peas per week, the value of which was £4 16s. This sum added to £2 14s. for the previous six months compound, amounts altogether to £7 10s. for the year.

The heifer is considered to weigh about 70 stones of 14lbs. Three weeks since I refused £30 for her. On Thursday last £29 were only offered. Taking the latter sum as the criterion of value, and deducting the original cost, leaves £20 10s. for twelve months maintenance upon the exclusive produce of the farm, besides the manure, which I repeat, is beyond price.

To prevent misunderstandings, I think it right to state, that the heifer never had a calf, and that she was one of six purchased at £8 10s. each. They were equal as to size and breeding. One died, and the others were sold at the end of six months for £19 each. Therefore, had this heifer been then disposed of, she also would have repaid £10 10s., whereas by retaining her six months longer, her value only increased £10, though at an extra cost of £2 2s. for compounds.

It will be seen that the heifer required £2 12s. less for the last half year than for the former. We may, therefore, reasonably expect, that if kept another half-year, a proportional decrease would occur. Depending, however, upon the economy of the system, and believing that a net profit will be obtained from the present value of £29, I intend to exhibit her at Norwich during the meeting of the Royal Agricultural Society in July, as a powerful illustration of the advantages derived from "*fattening cattle with native, instead of foreign produce.*"

The weight of the heifer in June was estimated with the others, at 54 stone of 14lbs.—now at 70. Then the price was calculated at 7s.—now at 8s. 3d. per stone. Therefore, had not the worth of the meat been increased, loss, instead of gain must have been noted; and as the increase is only 15 stones or 10lbs. per week, some idea may be formed of the loss sustained in rearing and fattening cattle for Christmas shows, and prizes, at ten, fifteen, or twenty shillings per week, for oil-cake, &c. &c.

I have published many similar returns to the above, and know from experience that the quickest generally prove the most profitable. But in the present instance, I desire to shew, that foreigners possess cattle prone to fatten with our own:—that meat can be raised from linseed compounds at one third less than the cost for cake; and that through the growth of linseed with summer and winter feeding in boxes, nearly all the expenditure throughout the country for artificial manure, and for cattle food, might be avoided.

It can scarcely be necessary to remind the British farmer of his position with respect to foreign competition; and of his sure destruction unless he strikes into new and improved paths. Lethargy, prejudice, and antiquated notions, must give way to a vigorous exercise of common sense. The requisites for rearing, feeding, and fattening cattle must be grown at home,—manure be economised,—and employment be afforded to the weaker portion of the population, which can all be mainly secured by the cultivation of flax, use of the seed, and summer, as well as winter feeding in boxes.

As further proof of the great utility of the system, I will just state that I sold lately a fat yearling heifer for £12, and sent two others equally so to the North Walsham exhibition, worth more than the average of three-year-old store stock.

If incentives were wanting to the adoption of my plan, the fact that 22,473,233 qrs. of grain, 510,377 head of cattle, and 1,268,040 cwt. of provisions were imported from the 1st of January, 1846, to November 5th, 1848, ought to stimulate us at least to attempt to stem the approaching tide.—*John Warnes, Trimmingham, Norfolk.*—*Farmer's Herald.*

HINTS FOR APRIL.—This is the month of activity. Commence plowing early, and do every thing well—put in barley, oats, and spring wheat without delay, and in the very best manner. Clear meadows and sow plaster early. Cart out all the manure, for corn, potatoes, ruta bagas, beets, and carrots. Mix manure well with the soil by repeated harrowings. Plow deep, and with straight, even, and very narrow slices, and the field will then look like a garden. Keep animals from pasture till it is grown—let cattle have plenty of roots. Repair fences, clear meadows of sticks, and stones, and save a week at the grindstone next hay—pulverize the scattered droppings of cattle over meadows and pastures. Give vigilant attention to sheep and young lambs—the latter, when chilled, may be dipped and rubbed in blood-warm water, rubbed dry, fed sparingly, and soon restored.

Uncover tender grapes, raspberries, strawberries, &c. Clean and dress asparagus beds, strawberry beds, and raspberries. Transplant strawberries. Put out

cuttings of grapes, gooseberries, currants, and quinces. Graft plums and cherries very early, etc. Examine peach trees, and kill the grub at the root.

Give good and regular attention to milch cows and young calves—see that the former are milked clean, and that the latter are regularly fed.

Milch cows which have sore teats, should have them washed regularly with cold water just before milking, which will soon cure them.

Repair farming tools, and get them ready for use—paint will protect them from the weather.

Examine cellars, and keep them clean and healthy—pick out rotting apples—see that vegetables are keeping properly.

STRAINS IN VARIOUS PARTS.—All horses are liable to these accidents, but they more frequently happen to those that are employed in field sports, such as hunting or coursing. The parts of the animal that are commonly affected are, the pastern, flexor or back tendon, and shoulder. In the hind leg, the fetlock, stifle, and round bone. I have devoted a considerable part of my time and study to these cases, and have always found inflammation to prevail or affect the parts less or more according to the severity of the strain; and am fully persuaded that reduction of blood, cooling physic, with fomentation and emollient preparations applied to the parts affected, prove the most effectual and expeditious mode of cure.

Strains proceed from an unusual or violent extension of the muscles, ligaments, and tendonous fibres that surround or cover the joint; consequently, whatever means are used, time and rest are indispensably necessary to complete the cure.

In whatever part or joint the strain may happen, take from two to four quarts of blood, according to the violence of the strain and strength of the animal, and give the after mentioned medicine:—

Barbadoes aloes, in powder, six drachms.

Rhubarb do. half an ounce.

Nitre, two ounces.

Tincture of ginger half an ounce.

The above should be divided into two parts. One part should be given in a little gruel immediately after the accident is discovered, and the other part should be given in six hours after. The animal should get bran mash and warm water, and be kept as quiet as possible. After the first medicine has done operating, one ounce of nitre and two ounces of cream of tartar should be given in a little gruel every day, for four or five days, to keep the bowels open. The part affected should be well rubbed with hog's lard, and the following bath laid on:—Take a considerable quantity of dried camomile flowers. Add as much boiling water as will swell them, but not more than the flowers can contain, that the juice or strength be not lost. Then mix a gill of vinegar to the bath, and apply it to the part affected as warm as the animal can bear it. This bath should be repeated every day for three or four days. A little warm water should be added occasionally, to keep the bath moist. If the accident should happen in a part where a bath cannot be applied, the part affected should be fomented frequently with camomile tea, with some vinegar and sugar of lead mixed in it. After the bath or fomentation has been used as long as it is thought necessary, or till the inflammation has apparently subsided, the following bracing mixture should be used:—

Spirit of sal ammoniac, two ounces.

Camphorated spirit of wine, two ounces.

Sugar of lead, two ounces.

The above ingredients should be mixed in a choppin of water, and the part affected should be well rubbed with the mixture twice a-day for several days and bandaged up middling tight. Observe to shake the mixture well every time it is used.

For a strain in the shoulder, I have found a rowel in the chest to prove very serviceable; or, if a horse should be strained in the stifle or in the round bone, I would recommend a rowel to be put in the thigh, and the other means used, as I have directed above. If any hard swelling remains after the inflammation has subsided, and the animal in the way of recovery, blistering will be the most effectual means of removing it.

In all cases of strains, the animal should be put into a roomy place, where he can step about at his own convenience or as he may feel himself able, as it is better to bring the affected parts gradually into action. For if the animal be forced on to exertion when he first begins to recover, it will almost to a certainty renew the complaint, and retard the progress of the cure probably three times as long as might otherwise be required. I could add a number of recipes for strains, which I have tried, but think it quite unnecessary, for the means which I have pointed out are easily obtained, and are what I have proved to be the most successful; but as I have before observed, whatever means are used, TIME and REST are indispensable.

Strains and hurts in the kidneys occasionally happen to farm horses, and are generally caused by extra exertion in drawing a loaded cart through a boggy place. The injury may be known by the following symptoms:—The animal will be very weak in the back, will yield to the pressure of the hand on his loins, feel difficulty in making water, the urine often dark coloured, and sometimes mixed with blood. This complaint is often attended with fever and loss of appetite. In this case I would recommend the following medicine to be given every day for four successive days. For each dose take—

Salt of tartar, one ounce.

Cream of tartar, two ounces.

Nitre, two ounces.

The above should be given in a bottle of camomile tea, with some honey or treacle in it; and strengthening plaster should be put on the loins. For which take common pitch and tar, an equal quantity of each, to be melted and mixed together, and applied over the loins, quite warm. A piece of woollen cloth should be put over it while warm, and make it adhere to the part. Let the animal get bran mash and warm water.—*Webb's Farmer's Guide.*

ON THE PIG.—By judicious care and good feeding, pigs can, in a comparatively small space of time, be fattened to an enormous size. Hogs have been made so fat that their skin was fifteen inches above the bone. In the *Worcester Journal*, May 6, 1841, Mr. Walker, of Malvern, is recorded to have killed a Hertford sow, weighing 61 stones 8lbs., measuring 7 feet 9 inches in length, and 6 feet 3 inches in girth behind the shoulders. She fattened so rapidly that she was killed in 14 weeks from the time that her young ones were taken from her. Dr. William Westmacott, in his "Scripture Herbal," says, "In most countries, as in the wood-lands of Worcestershire and other places, where hogs feed on acorns, the swine's flesh is rendered hard and sound. One peck of acorns, with a little bran per day, it is said, will augment a feeding hog one pound per day in weight for two months together. But it is good to macerate the acorns first in water, and if they be powdered or ground small, they will fatten pigeons, turkeys, peacocks, &c. Oak-mast exceeds all other mast of the forest; for the hams from Westphalia and other parts of Germany, are of those swine that feed on acorns; but it is best to give pigs a few peas after them."

In Wade's "British History" it is stated that, a gentleman in Norfolk put six pigs, of nearly equal weight, on the swine food and litter for seven weeks. Three of the lot were kept as clean as possible with curry comb and brush, and were found to consume in seven

weeks fewer peas by five bushels than the other three, yet weighed more when killed by two stones and four pounds upon the average,—a strong argument in favor of keeping pigs clean. From Mr. Boswell's experiments on the feeding of swine, we find, that during an equal space of time, the increase in the live weight of five pigs fed on steam-boiled food was 4 cwt. 2 qrs. 7 lbs., at an expence of £6 19s. 4d., while the increase in the live weight of pigs fed on raw food was only 2 cwt. 2 qrs. 21 lbs., at an expence of £5 8s. 6d.—a result highly favorable to the practice of feeding swine on steamed food.

"In fattening pigs," says Mr. J. Steele, "I have always found a mixture of barley and peas-meal, moistened with milk in sufficient quantity to make it of a drinkable nature, to be the best; the pigs must be rung to make them lie quiet; the sty should be warm and airy, and the sun not suffered to scorch their backs, as thin skinned white pigs are blistered by it, which not only renders them of an unsightly appearance, but retards their thriving. They should be protected from exposure to cold winds, cold rains, sleet, or snow—a subject not sufficiently attended to on many farms, where they are allowed to lie in heaps, shivering with the cold, in which case it is utterly impossible they can thrive. On the other hand, when they are kept constantly in a close pestilential atmosphere, their constitution becomes undermined, they look delicate and sickly, like consumptive subjects, and never arrive at any size or weight for their age. These extremes should be carefully avoided, and they should have an open-barred door, permitting a current of fresh air incessantly to set in and purify the place, conducing to the animals acquiring a vigorous habit and a doubly increased size. Too much cleanliness cannot be observed; for nothing tends more to their well-doing than dry feet, a dry bed, and sweet air."

The dung of swine is a cooling, rich manure for dry sandy ground, but from their eating numerous weeds, which pass too soon through their intestines to allow of their seeds being destroyed, this manure is not fit for arable lands, but is very good for the roots of fruit trees. Some time ago the Duke of Portland commenced strengthening and promoting the growth of trees in the grounds about Welbeck, by putting pigs in the plantations, and confining them within certain space till they had rooted up the ground at the foot of the trees, and of course manured the soil. They were then removed to the other parts of the plantation, and confined in the same way, and were fed meanwhile upon potatoes, large quantities of which were bought for that purpose. Mr. J. Hawkins tells us that a method has lately been adopted in some parts of the United States of procuring oil and spermaceti from pigs. They are killed and boiled altogether, to extract all their lard, which is then converted into *stearine* and *elain*. The oil thus procured is of a remarkably fine quality, and well adapted for lubricating machinery.—*Agriculturist Monthly Journal*.

EMPLOYMENT OF ARSENIC IN AGRICULTURE.—The following is the result of the investigation of a commission appointed at Rouen in Dec. 1842, having for its object to determine the best process of preventing the smut in wheat, and to ascertain whether other means less dangerous than arsenic and sulphate of copper (both of which are extensively employed in Great Britain), were productive of equally good results. The commission is of opinion—1. That it is best not to sow seed without steeping. 2. That it is best to make use of the sulphate of soda and lime produce, inasmuch as it is more simple and economical, and in no way injurious to the health of the sowers, or inimical to the public health, and that it yields the most productive and soundest wheat. 3. That as arsenic, sulphate of

copper, verdigris, and other sulphate poisonous preparations can be advantageously replaced by sulphate of soda and lime, the use of the poisonous preparations should be interdicted by the Government.—The proportions of sulphate of soda (Glauber's salts) and lime recommended as a substitute for arsenic in the prevention of the smut are as follows:—Dissolve 22 oz. of sulphate of soda in hot water, and slake 4½ lbs. of fresh and well-burnt quicklime in the ordinary way, by pouring on it small quantities of cold water; place 22 imperial gallons of the seed wheat in a cask or other suitable vessel, and thoroughly water it with the solution of sulphate of soda, stirring well the whole time, so that the whole of the seed may be well moistened, and there be a slight excess of liquid left; then sifted in the slaked lime, stirring well until each particle of seed be covered with lime. The seed is now ready for sowing. Should the seed be kept for a few days after it has undergone this preparation, it will be advisable to stir it occassionly, to prevent heating. Carefully conducted chemical analyses show that wheat, the produce of seed prepared with arsenic, does not contain any of that deleterious substance, whilst wheat, the produce of seed steeped in a solution of sulphate of copper (the most efficient preventive of smut), contains a notable quantity of copper. The cheapest way is to purchase the anhydrous, or dry sulphate of soda, of the alkali manufacturers, which contains twice as much real sulphate as the crystals, whilst it may be obtained at about the same price. In this case, half the quantity of sulphate of soda above mentioned will suffice, and additional water may be supplied, equal in weight to that of the dry sulphate employed, thus compensating for the water of crystallisation contained in the crystals. The proportion of water above indicated may then be added, and the process followed out. Thus, instead of 22 oz. of crystals, use 11 oz. of dry sulphate of soda, and 2 galls. 11 oz. (or rather better than 2 gallons and ½ pint imperial) of water.—*E. Henry Durden*.

PURCHASE OF HORSES.—*Nothing* requires more caution than the purchase of horses;* and we give the following hints, which are extracted from the excellent volume "On Horses," published by the Society for the Diffusion of Useful Knowledge:—

"In the purchase of a horse, the buyer usually receives, imbodyed in the receipt, what is termed a *warranty*. It should be expressed thus: 'Received of A. B. forty pounds for a gray mare, warranted only five years old, free from vice, and quiet to ride or drive.' It is important to observe that the age, freedom from vice, and quietness to ride or drive should be mentioned, because warranty as to soundness alone does not include these. Many disputes have arisen as to what ought to be termed sound or unsound. A horse is sound in whom there is no disease, nor any alteration of structure which impairs his natural usefulness, and he is unsound if he labours under any disease, or had any accident that has impaired his natural usefulness by an alteration of the structure of any part of his body. The term unsoundness does not apply to any original defect in the temper of the horse, or any deficiency in the strength and powers of the animal. The principal circumstances which constitutes unsoundness, besides the great number of actual diseases, are *broken knees*, which may indicate a stumbler, though not always; for any horse may meet with an accident, and the knee may now be quite well, though it requires great judgment to distinguish in this case. *Contraction of the foot* is sometimes, but not always, unsoundness; for it is occasionally natural, and not a fault. The following defects are considered to indicate unsoundness; *Lameness*, through any cause; *pumicid foot*; *sand-crack*; *spavin*; *splint*;

thickening of the back sinews of the leg; thrush; ossification of the cartilages of the foot; defects or diseases of the eyes; coughs, roarings, broken wind, or any defects of the lungs; quidding, or imperfect mastication; crib-biting; biting; kicking; restlessness.

"In order to complete the purchase, there must be a transfer of the animal, or a memorandum of agreement, or the payment of earnest-money; the least sum will suffice for earnest. No verbal promise to buy or sell is binding without one of these; and the moment either of these is effected, the legal transfer of property or delivery is made; and whatever may happen to the horse, the seller retains or is entitled to the money. If the purchaser exercises any act of ownership by using the animal without leave of the vender, or by having any operation performed or done to him, or medicine given, he makes him his own. The warranty of a servant is considered to be binding on the master.

"A man should have a more perfect knowledge of horses than falls to the lot of most persons, and a perfect knowledge of the vender, too, who ventures to buy a horse without a warranty. Where there is no warranty, and a defect is discovered after purchase, an action may be brought on the ground of fraud; but this is difficult to be maintained, for it is necessary to prove that the dealer knew the defect, and that the purchaser was deceived by his false representation. If the defect was evident, the purchaser has no remedy—he should have taken more care; but if a warranty was given, it extends to all unsoundness, palpable or concealed. Although a person should ignorantly or carelessly buy a blind horse, warranted sound, he may return it—the warranty is his guard, and prevents him from so closely examining the horse as he otherwise would have done; but if he buys a blind horse, thinking him to be sound, and without a warranty, he has no remedy. The law supposes every one to exercise common circumspection and common sense. If the horse should be afterward discovered to be unsound *at the time of sale* when the warranty was given, the buyer may return it and recover the price; but this proof is requisite; coughing on the following morning will not be sufficient, except the horse was heard to cough previous to the purchase, for the horse might have caught cold by change of stable." Although not legally compelled to give notice to the seller of the discovered unsoundness, it will be better for it to be done. The animal should then be tendered at the house or stable of the vender. Should the latter refuse to receive him, he may be sent to a livery-stable; for, in case of action, the expense will be recovered with the price; and it will be prudent for the buyer to refrain from any medical treatment. If a person buys a horse warranted sound, and discovering no defect in him, and relying on the warranty, resells him, and the unsoundness is discovered by the second purchaser, and the horse returned to the first purchaser, or an action commenced against him, he has his claim on the first seller, and may demand of him not only the price of the horse, or the difference in value, but every expense that may have been incurred. When an action is brought, the lawsuit is usually very intricate; a fair trial of the horse is allowed, and a certain time specified; but it is not always easy to ascertain whether the fault lies with the horse or his rider, and sometimes the dealer, as well as the buyer, is hardly used. If the horse is detained after the specified time of trial, he is supposed to be sold, and with all his faults.

"In London, and in most great towns, there are repositories for the periodical sale of horses by auction. They are of great convenience to the seller, who can at once get rid of a horse with which he wishes to part, without waiting month after month before he obtains a purchaser, and who is relieved from the fear of having the horse returned on account of breach of the

warranty; because in these places only two days are allowed for the trial, and, if the horse is not returned within that period, he cannot be returned afterward. They are also convenient to the purchaser, who can thus find a horse that will suit him, and by which, from this restriction as to the returning the animal, he may, perhaps, obtain 20 or 30 per cent. below the dealer's prices. But although an auction may seem to offer a fair open competition, there is no place at which it is more necessary for a person not much accustomed to horses to take with him an experienced friend, heedless of the observations or manoeuvres of the bystanders, the exaggerated commendations of some horses, and the thousand faults found with others. There are also always numerous groups of low dealers copers and chanters, whose business it is to delude and deceive."

THE CAPITAL OF AGRICULTURE.—As statistical facts form the basis of our reasonings and conclusions, it is highly important that they should be accurately stated. Mr. Spackman, in his "Analysis of the Occupations of the People," estimates the farmers' capital at 500 millions of pound sterling, being a fraction over £10 15s. per acre on 46,522,970 imperial acres. My own calculation and impression is, from the perusal of sundry evidence on the subject, and from facts within my own knowledge, that the average would not exceed £8 per acre, even if it attained to near that amount, which I very much doubt, when we set off against a few rich gardens and hop grounds an immense extent of very poor grass lands. If I am correct this deduction alone would diminish Mr. Spackman's estimate of the farmers' capital by 128 millions, a most important item. Perhaps you, or some of your talented correspondents, will throw a little more light on this interesting subject. Am I right in calculating that the farmers' gross produce per acre is considerably under £4. If so, his capital would only be turned over once in two years, which I apprehend is correct. I believe the slowness of return is one principal cause of farming being so slow a way of getting money, or rather, in some cases, so quick a way of losing it.—*I. J. Mechi, Tiptree-hall, near Kelvedon, Essex, Jan. 3.—Agric. Gaz.*

SALT FOR CATTLE.—In giving salt to neat cattle or sheep when stall-feeding, care should be taken not to give too large a quantity, or so much as would relax the bowels. If hay that is given to animals has been salted when storing, every farmer should be aware that this would be sufficient salt for the animals consuming it. One gallon of salt put to the hundred bundles of hay when storing, will never act injuriously upon any animal fed on this hay, as some of the salt may be lost. For hay that has been injured in curing, perhaps double this quantity of salt might be applied, but damaged hay should not be given to animals that were stall feeding for the butcher. The object of giving salt to animals confined in stalls in winter, and fed on dried food, is to keep their bowels in a proper state, without scouring them. When such animals get a proportion of roots, however, there is not much danger of anything wrong with the bowels. We have unquestionable authority that a *due* proportion of salt may be given to stall-feeding animals with excellent effect, but of course, the farmer requires to be careful that too large a quantity is not given, whether in the hay, or in any other way. There is no part of the farmer's business requires closer attention than the stall-feeding of cattle to make it profitable. Without this, food may be wasted, and the animals not improved, and unless they are constantly improving by the food given to them, and the mode of management adopted, something must be wrong, and a loss is almost certain to be incurred instead of a profit.—*Agricultural Journal. (L. C.)*

TOP DRESSING.—Every farmer and gardener knows that a generous application of manure, whether plowed in or spread upon the surface, is of great benefit to the crop. Green, unfermented manures, we have found, always were most efficacious when plowed or dug in; but in regard to fermented manures, many think that they are most useful when spread upon the surface.

A writer in the *London Gardener's Chronicle* has some good ideas upon this subject, which have been approved by some of our best horticulturists. Few persons, says he, are aware of the immense importance of top dressing. The merits may be classed as follows: 1st: they may be made capable of transmitting a vast amount of food to a suffering tree (for instance) in a very speedy way. 2ndly: they retain a steady permanency of moisture, in spite of adverse circumstances without stagnation. 3rdly: they are the cause of a series of annual fibres which are of much importance to tender trees. 4thly: by means of such, continued systematically, trees may be planted in shallower soils than without them; this tends to the production of much better ripened wood. 5thly: If a check is needed through rampant growth, or total absence of fruit, the removal of the dressing in summer will supersede the necessity of root pruning.

The above reasons which the writer adduces, refer principally to trees and shrubs, which are, to all intents, fixed or permanent crops. We have, however, often thought that the application of decomposed manure to the surface for annual crops, such as Indian corn, was better than ploughing it under. Many farmers harrow it in to pretty good advantage. We once ploughed in a quantity of green manure from the barn-yard, and spread on the surface a quantity of fermented manure. A part of this was harrowed in, but some circumstance, we have forgotten what now, prevented us from harrowing the whole piece. We planted it to corn, and at harvesting it was observed that the corn where the fermented manure was not harrowed in, was much the best. This, to be sure, was only one experiment, and an accidental one at that; but its result accords with the belief of very many farmers.—

PIG MANURE.—We have great confidence in the following statement, made at a late meeting of the Frome Agricultural Society, by S. Pocock, of Thoulstone Farm:—"Well knowing the excellence of pig manure five years ago, I was induced to try it solely for turnips. I tested it against guano and bone dust. The result was quite equal to the guano, and beat the bone dust hollow. My farm is one part clay, and another sand: I found the same result on both. I have also the management of a farm in Hampshire—a poor thin soil, and there the manure was equally good. I have continued to use it ever since with the same beneficial results. To carry out my plan, convenient farm buildings are necessary. I have a large dry shed, in which, first of all, I put a layer of dry coal ashes, about a foot thick and four feet wide, to which the deposit of the pigs is taken, both liquid and solid; and as soon as it begins to ooze out, I put on more ashes, and so on till it gets to about four feet in thickness. I then again commenced a fresh layer, and so on; after lying some time it is turned two or three times, and then it is fit for drilling. I have put in this year 45 acres of turnips with nothing but this manure, and the result is now open for the inspection of any who may choose to see it. I find the droppings of three pigs, carefully preserved, to be ample for two acres, and quite equal to three sacks of bone dust per acre. I am not speaking theoretically, but from experience; and I consider, if we can get such valuable manure for nothing but the labour, it will be much better than putting our hands in our pockets and paying 28s. or 30s. for artificial manure."

NEW VARIETY OF WHEAT.—Advices from St. Petersburg mention that a new variety of wheat has been recently discovered and cultivated in Bessarabia. It is called the *Kolus*, or large-eared wheat, on account of the peculiar beauty of its ears. At present it is limited to mere seed-wheat, and fetches twice the price of the ordinary *Arnautka*. One other and more important peculiarity of this grain is, that it is less affected by drought than any other varieties. At the same time, it possesses several other features, being distinguished by its greater fertility, its deep amber colour, and its early ripening. The important discovery was made by a peasant of the name *Bulatowisch* in the village of *Troitzk*, in the district of *Bender*, who, being a strict observer of nature, detected in his crops certain ears which were longer and became ripe earlier than the rest of the crop. These were collected, and sowed separately, and the result was an abundant harvest, and the introduction of a new and valuable variety of wheat. The Russian Government, it is to be hoped, will not let such an opportunity pass of rewarding one so deserving of a substantial mark of its favour. The event has created a great sensation amongst the agriculturists and dealers in grain, and the wheat well merits being named after the discoverer.

LIME VS. INSECTS.—I beg to assure your correspondent that lime may be applied with the most perfect safety to his trees, shrubs, &c.; and will also prove certain destruction to the slug tribe. With respect to the quantity, that must depend on the nature of the soil. In April last, having then recently obtained possession of a garden, &c., that had been greatly neglected, and was overrun with slugs, I spread quick lime over the whole, (vegetables, shrubs, grass, and orchard,) at the rate of about 80 bushels to the acre, so that all through that month we appeared to be in the midst of winter, with the ground covered with snow, even the evergreens being white. The result was, that not a slug was seen till the rains of October, and but very few then. The vegetables have been pretty good, and the growth and vigour of the evergreens have been quite remarkable. The soil is clay. February would be a very good time to lay on the lime.—*Gard. Chron.*

SORE SHOULDERS, &c.—Farm horses are liable to be injured on the shoulder or back with the collar or cart saddle. In these cases styptics are commonly used to dry up the wound, which is quite contrary to the nature of this kind of sores. Lime water and linseed oil are what I have found most beneficial in these cases. It may be prepared in the following way:—Put two quarts of water upon two quarts of unslaked lime; let it stand till the ebullition is over, then pour off the liquor for use; and add five gills of linseed oil and two ounces of sugar of lead. Mix them well together, and keep the solution in a bottle for use. When the animal comes in from work at night the sores should be washed with soap and water, dried with a soft towel, and dressed with a feather dipped in the mixture. This process should be repeated every night till the sores are healed, observing to shake the mixture well every time it is used.

When a horse is injured by the harness, it is necessary to examine what part of it caused the injury, and get it removed by altering the stuffing of the collar or saddle, that it do not press on the sore; for if a wound be constantly irritated, it is hardly possible to heal it. Too few that have the charge of horses consider properly how little is the cause that irritates and injures them, and makes them either dull and spiritless or refractory and spiteful; and I would therefore enforce on those who work them, the incumbent duty that devolves on them to adjust the harness for the care or comfort of the animal as much as possible.

Horticulture.

FRUIT TREES—BEST VARIETIES, &c.

We have much pleasure in directing the attention of our correspondent J. C. B., and that of our readers generally, to the following valuable communication from an experienced Nursery-man in the vicinity of this city, on the important subject of Fruit Trees—the best method of planting—including the most suitable varieties for the climate of Canada; together with many useful hints and general directions. As the writer has been for several years extensively engaged in the Nursery business, our readers may depend upon the accuracy of his statements, and place the utmost reliance on the soundness and practicability of his instructions.

*Toronto Nursery, Kingston Road,
March 12, 1849.*

GENTLEMEN,—The season for transplanting Fruit Trees has again arrived. In compliance with your request, I now send you a few remarks, the result of twenty years' experience and observation in this neighbourhood. If they be the means of directing the attention of a single individual to this important subject, the task will not have been in vain.

In favourable years, and on dry soils, Fall-planting is to be recommended; but in general, Spring is reckoned the best time for this operation. To have a reasonable anticipation of success, it is necessary that it should be done early: to get the roots perfectly established in their new position, before the weather becomes dry and hot, it is necessary that transplanting be attended to at the earliest practicable moment. Spring is the busy season of the year, but the time and labour bestowed on the procuring and planting out of a quantity of Fruit Trees must be considered as advantageously expended.

The value of a good Orchard is not yet fully appreciated in this country. It is pleasing, however, to witness the increasing interest manifested in this subject. Every owner of a piece of land, however small, should think it an imperative duty to plant out some trees. Independently of numerous other considerations, the positive profit, and augmented domestic comfort, resulting to the proprietor, from the ready sale and high price that good fruit commands, ought not to be overlooked. The facilities with which fruit trees of first-rate excellence can be procured, the easiness of their culture, and the favourable nature of Canadian soil and climate, are cogent reasons why every family in the land should enjoy an abundance of choice fruit. Moreover, Canada has a right to share, with other parts of North America, the profit and honour of having her fruit shipped to all parts of the world.

It is superfluous to insist on the necessity of cultivating good fruit; this is universally acknowledged; your readers only require the subject to be brought *seasonably* under their notice, to induce them to give it that attention which its merits claim. Even if confined to our own markets only, the demand will steadily increase. The progress of civilization and refinement, the increase of population, and the accu-

mulation of wealth, invariably increase a demand for choice productions of the *garden* and *orchard*, faster than they do the means of producing them.

Nursery catalogues usually contain a large amount of useful information in regard to fruit trees generally. If not deemed egotistical, I would recommend the descriptive catalogue of the "Toronto Nursery," lately published, as useful for occasional reference, and as containing some valuable hints for the best methods of transplanting, and the general management of trees. For the benefit of such of your readers (of which it is to be hoped there is a large number) as contemplate planting out trees this spring, the following brief directions will in general secure success—if carefully followed:—

Have the ground for your orchard securely fenced; the admission of hogs or cattle always proves fatal to the growth of young trees. If equally convenient, the aspect should be southerly, with as much declivity as at all times to prevent the lodging of superabundant moisture. The ground must be ploughed, and the furrow so deep as to turn up part of the subsoil. It will also be of much advantage to cross-plough and harrow it. The trees may then be planted; and according to the careful mode in which this part of the work is performed, much of the future thriftiness of the tree depends. In this case the old axiom, that what is worth doing is worthy of being done well, holds strictly true. The effects of proper transplanting are *permanent*. No subsequent amending of the soil can realize the advantages of having the operation properly performed in the first instance.

Let the holes be dug three feet in diameter, and twenty inches deep. Throw the subsoil aside, and put into the bottom of the hole sufficient fine friable surface mould, to bring it to the proper depth to receive the tree. Prune off carefully all bruised or broken portions of the roots: although trees be raised in the best manner out of the nursery, it is impossible to prevent the spade coming in contact with and bruising some of the lateral roots. Place the tree in a perfectly upright position, spreading out with the hand the roots horizontally in their natural order; fill in with finely pulverized surface soil, gently shaking the tree to fill up all vacuities. When the roots are covered, throw in a pailful of water, fill up with the remainder of the earth, press it firmly down with the foot, and the operation is complete. The tree should then stand about two inches deeper than in the nursery rows. Deep planting should be avoided; it is ruinous to the growth and vigour of young trees: after transplanting, the upper roots should not be more than three inches under the surface.

Mulching, in technical language, should by no means be neglected. This consists in putting a quantity—say a wheelbarrow-load—of long manure on the surface, around each tree. Allow this to remain till the following spring, when it may be spaded into the ground at the extremity of the roots. This practice is recommended in the extract from Downing, in your last number; but it is productive of such beneficial results that I cannot, at the risk of repetition, refrain from urging on your readers the necessity of its adoption in all cases.

To promote the vigorous growth of the transplanted tree, let the wood of last year's growth be cut off from two-thirds to at least one-half of its

growth. By this means the ascending sap is concentrated, and strong leading shoots freely developed, forming the limbs of the future tree. This cutting-in of the young wood is not to be repeated in future years; the main object in doing so at the period of transplanting, being to give a fresh impetus to the growth of the tree, which was in some degree checked by its removal.

Having said this much on the propriety and *modus operandi* of transplanting fruit trees, I will be brief in advising a selection of suitable sorts for general cultivation. When trees are procured from respectable, well-established nurseries, the selection may in general be safely entrusted to the proprietors. The opportunities they enjoy of properly estimating the value of orchard products, the desire to establish and maintain the character of their own establishments, are motives sufficiently strong to induce them, when the selection is left to them, to do their best for the satisfaction of their customers. In the following list, none are included but such as have come under the personal notice of the writer, and all the sorts therein enumerated may be depended on as thriving well, and being in all respects adapted to this latitude.

THE APPLE

Is more generally known and universally esteemed than any other fruit. It is not a native of North America, but has been perfectly naturalized, and in the Northern States and in Canada succeeds better than in any other part of the world. Good varieties are now extremely numerous, and no excuse is left for the cultivation of poor inferior sorts. It accommodates itself to almost any variety of soil, but in a deep heavy loam it is most productive, and attains the greatest perfection.

EARLY APPLES.—Red Juneating—Early August, the best eating apple known—Early Strawberry, Keswick Codlin, excellent for cooking from the beginning of July—Summer Queen, large and fine.

AUTUMN FRUIT.—Early Crofton or Irish Peach Apple—Fall Pippin, "a noble fruit"—St. Lawrence, Fameuse or Snow. These two varieties had their origin in Canada, and for fall fruit cannot be surpassed. Ribston Pippin, in Europe a winter fruit of great excellence, but not keeping here after the end of October. Toole's Indian Rareripec, Hawthorndean, begins to bear very early—a handsome fruit, and very productive. Pumpkin Sweeting—large and productive.

WINTER FRUIT.—Rhode Island Greening, the most useful and saleable apple in cultivation. Nothing superior to this famous variety has yet been discovered. A gentleman in Toronto last winter sent 35 barrels of this fruit to Glasgow, where they were sold at 35s. sterling per barrel, leaving him a clear profit of \$4 per barrel. Baldwin, the best market apple in Boston—Esopus Spitzenburg—Welland Pippin—Yellow Bellflower—Hubbardson's Nonsuch, an early winter fruit—Blue Pearmain—Tolman's Sweeting, productive and superior for baking—Pomme Gris, the finest dessert apple, and a long keeper—Swaar—English Golden Pippin, small, but a long keeper and fine flavour—American Golden Russet, will keep till the end of June.

In an orchard, apples should be planted at the distance of 30 feet, requiring about fifty trees to the acre.

THE PEAR,

Like the apple, is not indigenous to North America, but was introduced by the early settlers. It is a hardy, long-lived tree, and succeeds well here. New varieties to an almost endless extent, have recently been raised in Europe and the United States. Being cultivated on a more limited scale than the apple, I will only enumerate a few, whose merits cannot be disputed. The soil best adapted to the growth of the pear, is a strong clay loam; light sandy soils should be deepened by trenching and liberal admixture of clay. They should be planted at the distance of 25 feet apart, for standard trees. For a garden, pears wrought on quince stocks are now in much estimation. In this way they do not attain great size, but come early into bearing—generally the second or third year after being budded. Ten feet apart is ample space when on quince stocks.

SUMMER PEARS.—English and French Jargonelle—Summer Bonchretien—Summer Bell—Madelaine Virgalieu or White Doyenne.

FALL AND WINTER PEARS.—Steven's Genesee, Bartlett, Buerre Diel, Buerre Gris, Napoleon Buffum, Hazel, Chaumontelle, Orange D'Hiver, Winter Bergamot, St. Germain, Jersey Gratioli.

PLUMS.

The Plum thrives best on a rich clay soil. It succeeds so admirably here, and the fine sorts are possessed of such a rich luscious flavour, that a few choice varieties should be cultivated by every one. In Toronto market, plums of the best varieties are readily sold at four to five dollars per bushel, a price which handsomely remunerates the grower. The following varieties are all of great merit;

White Egg or White Magnum Bonum, Green Gage, Prince's Imperial Gage, Bolmar's Washington, Duane's Purple, Coe's Golden Drop, Smith's Orleans, Huling's Superb.

An ornamental variety of the Plum, the Double-flowering Sloe, is a remarkably handsome shrub. In spring, when covered with a profusion of small double blossoms, it is universally admired. This is worthy of a conspicuous place near the houses of such as possess the taste to adorn the neighbourhood of their dwellings.

CHERRIES.

The culture of Cherries commends itself to every grower of fruit, from the farmer with his hundreds of acres, to the merchant and mechanic, with their village lot. The fruit is ripe at a season of the year when no other is to be had. Nothing surpasses it in beauty, delicacy and richness for the dessert, and some varieties are of great value for cooking and preserving. The tree grows rapidly, comes early into bearing; is of a regular, handsome shape, and well adapted for shade and ornament. It combines in an eminent degree utility and beauty. The following are all of great merit:—May Duke, Large Red Biggareau, Napoleon Biggareau, Black Eagle, Black Tartarian, Elton, Yellow Spanish, Transparent Elkhorn. For preserving, Downing's Late Red and Morello are considered the best.

PEACHES.

Although the crop of Peaches in this neighbourhood is somewhat precarious, and not always to be depended on, yet a few trees of the early sorts are worthy of a place in every garden. In some parts

of the country, particularly west of this, it thrives well, and bears abundantly. I have occasionally seen as fine peaches as could be desired, grown in this neighbourhood. I am of opinion that if none but the following or similar early sorts were grown, there is every reason to believe that the cultivation of this delicious fruit might be attended with more success:—Early Tillotson, Early York, Early Crawford, Large Early Red Rareripec, Yellow Allberge, Royal George.

It was intended to have noticed briefly what may be called the minor fruits—such as vines, strawberries, &c.—but this communication having extended itself to a greater length than was anticipated, I will postpone their notice, and that of ornamental trees, shrubs, &c., to a future number.

The pruning of orchards should be done in March or early in April. Young trees require but little pruning; it is enough to keep the heads in proper shape, and to remove branches that cross or interfere with others. All suckers and side-shoots should be removed. Old trees, the heads of which have grown dense with branches, should be thinned out, to admit the sun and air. This improves very much the size and flavour of the fruit. In doing this, a pruning saw should be used. The limbs should be cut close to the tree, and the cut smoothed over with a sharp knife. No pruning should be done, if it can be avoided, after the sap has commenced flowing. The plum, cherry, and other trees, apt to give out gum, which is termed “bleeding,” should not be pruned till midsummer.

In conclusion: it is difficult to persuade a great number of persons, that for transplanting, trees are not the better for being *too large*. Many insist that the larger the better; but my experience, and that of every observing cultivator, has convinced me that this is highly injudicious. Apple trees about six feet high, and three, or at most four years from the graft, are the most suitable for transplanting. Pears and plums the same. Cherries, two or at most three years from the inoculation, and peaches one year. Having been planted, they should be carefully tied to a stake, to prevent them being blown about by the wind, and the land—or at least the land about the trees—cultivated and occasionally manured for four or five years. This system will ensure healthy, handsome trees, and bring them rapidly forward into a productive state.

I am, Gentlemen,
Your obedient servant,
GEORGE LESLIE.

CULTIVATION OF THE GOOSEBERRY.

To the Editors of the Canadian Agriculturist.

GENTLEMEN,—I send you the following brief observations on the cultivation of the gooseberry, in reply to the inquiries of “*An Amateur*.”

The gooseberry in Canada is not one of those fruits that will grow and bear good crops except a good deal of pains be taken to prepare the soil, which ought to be a deep, rich loam. It is generally found that the gooseberry will do best in a situation that is partially shaded from the mid-day sun; at the same time, it will not do to be planted under the drop of trees. They require regular pruning; cutting the young wood well in, and leaving the centre of the bush free and open to admit light and air;

which will be a great means of preventing the fruit from being attacked with the mildew. The gooseberry is also subject to the attacks of the green caterpillar; the only safe cure for which is to gather them off carefully with the hand, and repeat the operation every morning until you clear them off. There are a great many varieties of the gooseberry cultivated in England; some of the sorts attain to a very large size. The *Roaring Lion* has been known to weigh over an ounce and a half. But the kinds best adapted for Western Canada are those of a medium size. The following varieties I consider suitable for a small garden:—

Red—Warrington, Crown Bob, British Hero. *Green*—Large Green Hairy, Green Bottle. *White*—White Smith, White Honey. *Yellow*—Golden Yellow, Rilton Hero, Britannia.

JAMES FLEMING.

Toronto, March 16, 1849.

FORMATION OF HOT-BEDS.

Thinking that a few directions on this subject might be useful to some of our subscribers at this season of the year, we copy the following practical instructions from Mrs. Loudon's interesting work on Gardening for Ladies.

Many kinds of manure may be used in making hot-beds, but the principal materials in use in most gardens are stable manure, dead leaves and tan:—

The first of these, which is by far the most general, consists partly of horse-dung, and partly of what gardeners call long litter, that is, straw moistened and discoloured, but not decayed. The manure is generally in this state when it is purchased, or taken from the stable, for the purpose of making a hot-bed.

The necessary quantity of manure is procured, at the rate of one cart load, or from twelve to fifteen large wheel-barrowfuls, to every light, (as the gardeners call the sashes of the frames,) each light being about three feet wide; and this manure is laid in a heap to ferment. In about a week the manure should be turned over with a dung-fork, and well shaken together; this operation being repeated two or three, or more times, at intervals of two or three days, till the whole mass is become of one colour, and the straws are sufficiently decomposed to be torn to pieces with the fork.

The size of the hot-bed must depend principally on the size of the frame which is to cover it; observing that the bed must be from six inches to a foot wider than the frame every way. The manure must then be spread in layers, each layer being beaten down with the back of the fork, till the bed is about three feet and a half high. The surface of the ground on which the hot-bed is built, is generally raised about six inches above the general surface of the garden; and it is advisable to lay some earth round the bottom of the bed, nearly a foot wide, that it may receive the juices of the manure that will drain from the bed. As soon as the bed is made, the frame is put on, and the sashes kept quite close, till a steam appears upon the glass, when the bed is considered in a fit state to be covered three or four inches deep with mould; observing, if the bed has settled unequally, to level the surface of the manure before covering it with earth. The seeds to be raised may

either be sown in this earth, or in pots to be plunged in it.

The proper average heat for a hot-bed intended to raise flower seeds, or to grow cucumbers, is 60°: but melons require a heat of 65° to grow in, and 75° to ripen their fruit. This heat should be taken in a morning, and does not include that of the sun in the middle of the day. When the heat of the bed becomes so great as to be in danger of injuring the plants, the obvious remedy is to give air by raising the glasses; and if this be not sufficient, the general heat of the bed must be lowered by making excavations in the dung from the sides, so as to reach nearly to the middle of the bed, and filling up these excavations with cold dung, which has already undergone fermentation, or with leaves, turf, or any other similar material which will receive heat, but not increase it. When the heat of the bed falls down to 48° or lower, it should be raised, by applying on the outside fresh coatings of dung, grass, or leaves, which are called linings.

When hot-beds are made of spent tanner's bark or decayed leaves, a kind of box or pit must be formed of bricks or boards, or even of layers of turf, or clay, and the tan or leaves filled in so as to make a bed. Where neatness is an object, this kind of bed is preferable to any other; but a common hot-bed of stable manure may be made to look neat by thatching the outside with straw, or covering it with bass mats, pegged down to keep them close to the bed.

The above mode of preparing hot-beds, recommended by our fair authoress, will answer well for growing melons and cucumbers, but if cabbage plants, lettuce, or radishes are required, the bed need not have more than 13 inches of manure. The soil put on the hot-bed will require to be at least one foot thick; on the surface of this sow the seed, and give plenty of air as the plants advance in growth.

HORTICULTURE, &c.—It is truly gratifying to the lovers of horticulture and botany, to see the number of structures, from the unostentatious glazed pit to the magnificent conservatory, which have appeared around us within the last few years.

I am fully convinced that, generally speaking, there is no class or profession, which can erect and keep in repair, and work at less expense a small greenhouse or vinery, than the farmer. There are many landlords, I know, who would object to farmers having structures of the kind, as they consider them superfluous, and not in accordance with the farmer's vocation. May I ask, why may not the farmer have his little greenhouse or pit to grow a few early grapes or potatoes, or his wife and daughters, a few ericas, camellias, or calceolarias? he pays his rent, and manages his farm well, therefore I assert that he has as much right, if he chooses, to erect a small house or pit, as his landlord his extensive conservatory. I know there are some landlords who object to their tenants enjoying the sports of the field, or in fact any enjoyment at all; but would have them continually plodding on in their daily vocation of tilling the soil and attending their stock without any recreation at all; however such fancies have their own reward, for I have always seen that where the most generosity and liberality exist, the best tenants and good management abound.

The various papers which follow on this subject will show what can be performed at a small cost and little

room; it is true that the produce cannot be great, at the same time many little luxuries can be obtained, which although intrinsic in value, are gratefully received as presents, and give pleasure to the donor to be able to give a dish of fruit weeks before the out-door season would allow.

There is generally some sunny corner or convenient spot, where a small house can be placed, if near the house so much the better, as by the great improvements which have taken place of late years in the system of heating by hot water and steam, the fire of the kitchen or sitting room will perform the office with little cost and extra trouble. A house fifteen feet long, and twelve feet wide inside, will produce much if properly managed, for fruits, plants, and vines, and two glazed pits, eight feet by seven feet, will be ample.

If fruits are the object, the house should have a pit eight feet wide in the front part of the house, built of brick set in cement, so as to hold water for bottom heat, and a galvanized iron tank against the back wall, to heat the atmosphere of the house. In a house of this kind vines in pots could be grown so as to come in early, and ripen their fruit before the vines planted outside are brought into the house in the end of April. A few dwarf peaches or nectarines also in pots; cucumbers in boxes on the tank at the back, while a hanging shelf and the front would contain a few pots of strawberries or French beans. The pits could be planted with early potatoes, so as to be ready by January, when another planting is made of the same, followed by cucumbers, melons, or vines, in pots according to the fancy of the owner.

If on the other hand, flowers are preferred, an upright glass in the front would be requisite, with the entrance in the centre, and a stage on each side, with galvanized tanks under each for heat. I would not advise the cultivation of plants that require a strong heat, but the more hardy denizens of the Cape, Australia, and China, among which some of our most magnificent exotics are found, many of these would only require the exclusion of frost, and plenty of air on all occasions when safe. A house of this kind, with little care and trouble, would give a continued succession of flowers.

First, in the autumn, the beautiful Chrysanthemums, followed in the middle of winter, by the Chinese primrose, *Primula sinenses*, camellias of all sorts, hyacinths, jonquils, tulips, narcissus; succeeded in spring by cinerarias, fuchsias, calceolarias, pelargoniums, epacrides, and Australian plants, until the vines are brought into the house, and the weather sufficiently warm to allow of the plants being turned out of doors, for the vines to be accommodated with the temperature most congenial to them, when a few balsams, coxcombs, and other annuals can be admitted to fill the stages.

The pits would preserve during winter, verbenas, heliotropes, and other half-hardy plants, for bedding out in spring.

Such a house would be erected for £20 or £25, and the pits in proportion. Glazed lights can now be purchased at from 9d. to 1s. per square foot, painted and all ready for putting up; a common carpenter could make the rafters and put the frame work together, and a bricklayer complete the remainder.

As I said before, the structure could be heated by the kitchen or house-fire, or from the boiler that cooks the food for the cattle: or at a small cost a boiler and pipes might be purchased; or the old smoke flues could be made if preferred, which, after all, are perhaps the best.—*Thomas Keir Short.—Farmer's Herald.*

Nothing is bestowed on man in this life, without great labour.—*Horace.*

Labour relieves us from three great evils—indolence, vice and want.—*Voltaire.*

Mechanics and General Science.

We think it right to inform our readers, that the following article is one of a series, from the pen of a gentleman of high scientific standing, whose critical acquaintance with the theory and practice of Chemistry, as well as Natural Philosophy generally, we hope to see occasional proofs of in the pages of the *Agriculturist*.

SCIENTIFIC NOTICES.

NO. I.

ON THE SUBSTANCES THAT FALL FROM THE HEAVENS.

The consideration of these bodies may be divided into two parts. In the first we shall treat of those substances which are solid, and not easily altered in form; while in the second part will be included those that are either fluid originally, or may be rendered so by the application of heat.

In the first part we shall therefore speak of the so-called sulphur rains; the root, fish, frog and corn rains; as also of meteoric stones. In the second we shall describe the different forms under which water is separated from the atmosphere, and shall thus embrace the subjects of rain, hail, snow and frozen rain; and shall append to this a short account of clouds, from which these bodies are originally derived, as well as of fogs and mists.

The phenomena are so constantly occurring, and so continually attracting our attention, that it is extraordinary how few persons ever give themselves the trouble of enquiring either into their real nature, or into the causes that produce them. The following series of articles may perhaps serve to give some of our readers, who may not have paid particular attention to the matter, a clearer insight into the nature of these phenomena than they at present possess.

To commence with the first on our list, "The sulphur rains." How unusually prevalent is the idea, that sulphur or brimstone occasionally falls from the sky! We find the same idea extending in all countries—for in almost every part of the world the phenomena has been observed, under precisely similar circumstances. We find, indeed, that in some localities the so-called sulphur rain is of much rarer occurrence than in others: thus, in some parts of England the yellow deposit which characterizes the phenomena is scarcely ever seen, while in every part of Canada it appears every year.

Sometimes the quantity of the yellow substance that falls is so great, as to cover the whole ground with a thin coating, like snow; but it is more generally only seen on the surface of water in butts and tanks, or on the edges of puddles. The substance floats easily on water, without immediately becoming wetted; and it is in such situations as the above-mentioned, that it more readily attracts our attention.

It is not to be wondered at that this substance should have received the name of sulphur; its yellow colour, its granular structure just like common flowers of sulphur, and its burning when thrown into the fire, are sufficient reasons for the prevalence of the opinion regarding its composition. If it were

sulphur, however, we could perhaps only account for its presence in the atmosphere by supposing that it had been ejected from some active volcano, and brought to us by the winds. Were that the case, however, these sulphur rains would probably occur at one season of the year just as well as at another; while we find, on the contrary, that they occur, at least in this country, almost exclusively in June or July. It does occasionally happen, particularly in some parts of the world, that these sulphur rains are observed in April or September, or other summer months; but by far the greater number take place in those above mentioned; from which we may conclude that there is some cause existing every year at that particular period which produces the phenomena.

A microscopical examination of the yellow substance affords us immediate insight into its nature, and we find it to consist of minute grains of the pollen of plants. The substance that we generally find in Canada, is the pollen or fructifying principle of the different species of pine, the flowers of which arrive at maturity and produce abundance of pollen just about the time when these sulphur rains are usually observed. The cones being charged with this light substance, if a high wind should arise and drive through a pine forest, it will naturally carry with it, by the agitation of the trees, a large quantity of the pollen, which will not be deposited from the air for a considerable time, or will perhaps only be carried down by the first rain that falls. We find, indeed, that on the side of a pine forest from which the wind blows, there is no yellow substance to be found, while it extends for miles on the other side in the direction of the wind. All doubt as to the origin of the substance may be removed by collecting some of the sulphur rain, and also some pollen from the cones of the red and white pine, when, on examining them both with a tolerable microscope, they will be found to be exactly the same—the powder in both cases consists of small particles, not perfectly globular, but rather kidney-shaped, a form that is peculiar to the pollen of all pine trees. All plants produce pollen, the grains of which vary very considerably in shape, each plant having a peculiar form of pollen; and hence we can easily determine from the shape of the grains, the plant from which the pollen is derived; and as some plants come to maturity and produce pollen at different seasons, it may occasionally happen that a sulphur rain will be at other seasons than that mentioned above as the common one, and which will be found to consist of the pollen of other plants than pines.

That the yellow substance called sulphur rain, does not really consist of sulphur, has been proved since the time of Scheuchzer, but the idea of its being so remarkable a substance was too attractive to be easily relinquished. It has been stated that lightning when passing over a wall or other surface sometimes deposits a quantity of sulphur, and it has also been stated that these sulphurs, or to speak more correctly, pollen rains, are observed principally during thunder storms, and hence the one has been supposed to depend on the other. The observation is probably correct, but the explanation of the circumstance seems to be, that the period when the pines become loaded with pollen is that part of the summer when electrical storms are prevalent, and as they are usually either preceded or followed by

violent gusts of wind, we can easily understand why the two phenomena appear together.

Whether sulphur is ever deposited from the atmosphere seems to be a matter of doubt; it is by no means impossible, when we consider the immense quantities of vapours of sulphur produced by volcanoes, but the only authentic record of any such precipitate or deposit that I have met with is in one of Berzelius' Annual Reports (I unfortunately cannot lay my hands on the article at this moment). The substance was examined by a competent chemist and proved to be sulphur.

In the years 1785 (in the month of October,) and 1814 (in July,) a curious phenomenon was observed in Canada, which has received the name of the dark days; during the prevalence of this peculiar appearance, a yellow substance was observed floating on water, which is described by Chief Justice Sewell in his excellent paper on the subject, as having consisted of sulphur. He attempts to explain the phenomenon by the assumption of a volcanic eruption in Labrador; but whatever may have been the cause of the darkness, and other circumstances (such as a fall of ashes, &c.), there is no ground for supposing that the yellow substance observed was anything but the pollen of some plant or other, especially as storms of wind, thunder and lightning, prevailed for a considerable time.

H. C.

ROAD MAKING.

To the Editor of the Canadian Agriculturist.

SIR.—The most important improvement that our country requires, is improved Roads. We have got canals enough for a while—let us now have good roads to get at them. No country can prosper until its principal thoroughfares are thoroughly improved; and unless we very soon get good roads and railways in Canada, we will be behind all the civilized world. See how our neighbours to the south go a-head!—and go to Europe, especially Britain, and see what roads and railways they have there!

I am glad to see a general Bill brought in below, for Joint Stock Companies in making roads and bridges. I hope they will make it as liberal and encouraging as possible for contractors.

Many people dread and object to being obliged to pay tolls on a good road. Why should they, when they can travel with double and treble the load, with more ease, more speed, and more comfort, than they did before? Why, the very saving in tear and wear of wagon, harness and horse-flesh, would more than pay for the toll-bars. What a difference in spring, betwixt a good Macadamized or planked road, and mire and mud to the axle!—and that is generally the time when it is our special interest to get to market. It would be a great improvement if our roads were even drained on each side and graded—much better still if a portion were Macadamized or planked. Where materials are at hand, I should think Macadamizing the roads the most advisable. Is there no machine for breaking stones for roads? I have never heard of any but hammers and human hands. Still I think, in this wonderful age of discovery, some machine might be contrived, with the power of a small steam-engine, to move along, which would break the stones wholesale for roads, at a cheap rate. I wish some mechanical

genius would set his brains to work, and produce something effective for the purpose I have mentioned. No doubt it can be done.

W. F.

Brockville, Feb. 19, 1849.

DEAR SIR,—I was much struck with an article in the last number of your excellent journal, entitled "Ice in hot ashes," in which a traveller describes his having found heavy crystals of ice, resembling shark's teeth, and all set in one way, among a heap of warm ashes; and the aforesaid traveller compares the formation of ice in such a locality to the production of the same substance in a red-hot crucible, an experiment which has lately been made. Now, with all due humility, I would beg to remark that in the experiment alluded to, the vessel has to be made very hot—nearly red, and it seems probable that if the ice in Mount Aetna had been produced from a similar cause, the incautious traveller would have burnt both his fingers and the soles of his feet, which he does not mention—in fact he says the ashes were warm. I should be sorry to throw the least doubt on so curious a circumstance, but I may perhaps be permitted to ask whether the above-mentioned traveller may not have mistaken for ice, the beautiful transparent crystals of Coelestine or sulphate of strontia, which are very heavy, are as clear as water, have very much the appearance that he describes, and are found in great abundance on the sides of the craters of volcanoes?

Hoping I may be wrong in my supposition,
I remain

INCREDULOUS.

THE ELECTRIC LIGHT.—The electric light must not be considered a new discovery. One of the earliest experiments performed by the aid of the galvanic battery was the producing of an intense light, by transmitting the electric fluid through the interval between two points of charcoal. Nor is the attempt to adapt the electric light to purposes of general illumination anything new. Seven years ago, an American patented an invention for this purpose; but obstinate difficulties were in the way. It was necessary to procure charcoal of a peculiar kind, unvarying in the density of its substance; and to regulate the voltaic current in its passage across the charcoal points. Any variation in the condition or position of the points, or the slightest diminution in the voltaic current, produced a change in the degree of quality and colour of the light so as to render it unavailable for practical purposes, and indeed, it often occurred that one of the points falling from its position, left the surrounding space instantly in utter darkness. Mr. Staité, the patentee of the new invention, however, reduces coke to impalpable powder, makes it into a paste with water, forms it into sticks, and exposes it to violent heat. He then dips the sticks into melted sugar (the chief constituent of which is charcoal), so that every minute interstice may be filled up, and exposes it to heat again. The result is a carbonaceous mass of density superior to any that can be obtained from wood, and which can easily be obtained in the form of straight sticks, an impossibility with charcoal made from wood. The other desideratum, viz. a steady light, dependent on a regular flow of electricity and the maintenance of certain given relations of position between the two carbonaceous points, required certain mechanical appliances of a self-acting kind. Thus, in order to the development of the light, it was necessary that the two charcoal points should be

first brought into contact; then separated and maintained (notwithstanding the variation of the charcoal points as the result of the electric action) at a given and unvarying distance from each other. These objects have been accomplished by passing the electric current itself through a coil of copper wire surrounding a bar of soft iron. The bar becomes magnetised, and is adapted to rise or fall as the current is strong or weak. These motions of rising and falling act upon the escapement, by means of which an equal current of electricity is always maintained, and the charcoal points held at a distance from each other proportionate to the passing amount of electric current. Thus the difficulties of this invention are said to be overcome. It has been stated that it amounts only to *one-twelfth* of the cost of gas—but this with regard to expense, is doubtful. The advantages of the light are, that it does not deteriorate the air of the apartments in which it is employed, and will not blacken or soil the most delicate fabrics, being unaccompanied by smoke or vapour; there is no danger from fire; its light is white, and exhibits objects in their true colours; its intensity is much greater than that of gas, and may be employed on railway trains, on board ships, and in mines, without danger of explosion.

THE ECONOMY OF CREATIVE POWER.

"The Lord of hosts, wonderful in council, and excellent in working."—*Is. xxviii, 29.*

It is a *thing observable* through every province of nature—a *principle* to which every science lends its authority, that the power of God, *infinite in its development, is infinitely economized in its operation*—a principle to be traced in every manifestation of force in inanimate matter, and under every form of independent motion. All that we call design in natural things has in some way a direction to it. The very weed under our feet shews it in the form of its stalk; and the tree of the forest shapes out its trunk, moulds its branches and tapers the very stems and fibres of its leaves, in obedience to it. That economy of creative power which thus manifests itself in the works of God, infinitely *perfect* in its degree, has its remote but visible type in the *imperfect* husbandry of our efforts, which impels us to use the simplest possible means of effecting that which we have to do, and which is implied in what we call the best means of doing it. In us this economy has for its object the preservation of our living powers; and for its immediate origin, a sense of lassitude and fatigue, for that end especially implanted in every living thing. In him by whom this sense was laid upon us as a law, but whose own arm is "not straitened," and who "fainteth not, neither is weary" (Ps. xl. 28), that which in us he has made a necessity of nature, is but a principle of wisdom in operation.

Let us now seek if there be any evidence by which it is given us to perceive the operation of this principle in the architecture of the heavens. Let us listen if, in the stillness of the universe, there be not a *voice* re-echoed from worlds which, "without speech or language," traverse its unfathomable regions, and stars which silently repose in its depths—the voice of revelation: "by His wisdom hath he made the heavens, and stretched them out by his understanding."

It is a high privilege thus to be able to commune with God in his works—to feel (as it were with a *sense* of the understanding) his wisdom guided the hand of his power. It is to enjoy here a knowledge of which, little though it be, that of heaven, as far as it includes the mysteries of creation, cannot but be a continuation—to hold here a few links of a chain which proceeds from the throne of God. And although now it is to the silent monuments of nature that the researches

of science are limited, and in respect to these although now we see but as "through a glass darkly," yet is there a spirit of devotion which, regarding these things as *beginnings*, with a faith almost invigorated into knowledge, anticipates, walking in this twilight,—the daylight of heaven—when we shall see "face to face," and "know even as we are known;"—a time when to the soul, now released from the corruptible body, in some degree (however slightly) schooled by the instruction of faith and knowledge, and no longer straitened by the imperfections of sense, the works of Grace, the works of Providence, and the works of Nature, shall present, under one vast but simple and united scheme, the equal evidence of God's mercy, his wisdom and his power.—*Moseley's Astro-Theology.*

ETCHING AND ENGRAVING IN BLACK MARBLE.—An interesting feature connected with the manufacture of black marble, is the depicting, by the application of an acid, representations of figures, flowers, Egyptian hieroglyphics, and other objects upon a polished surface. The method employed in doing this kind of engraving is similar to that pursued with respect to copper, viz., by first tracing with wax or varnish upon the marble the object intended to be represented; then, when the preparation is perfectly set, with a point marking in the finer parts of the figure, it is then covered with an acid, which bites off the polished surface of the marble, which was not covered with the preparation, leaving those parts which were covered standing in slight relief; the wax is then cleaned off. Thus it will be seen that any one with a knowledge of drawing could practise this part of the art; not so, however, with regard to another style of engraving on marble, which I will mention, and which is peculiarly English, such productions from abroad being unknown. There is no preparation of wax, or application of acid used here; the entire process is done by graver's points and diamonds, hence called the "diamond engraving." It must be observed, that for effect in this work, the artist is confined to a most limited space, viz., from a black polished surface to a grey ground, the natural colour of the marble before it is polished.—*The Builder.*

WHEELBARROWS.—The greater the diameter of the wheel of a barrow, and the smaller the axis or spindle on which it turns, the less power will be required to drive it forward; for the friction is proportionately reduced.

The diameter of the wheel might be increased with manifest advantage to double that now employed, for even then it would be below the point of draught or impulsion, (the hand of the labourer,) and the nearer it can be brought to a level with this, the more efficiently he exerts his power.

The breadth of the wheel's periphery, or felloes, might be also increased two inches advantageously, for as it is always employed upon a surface in some degree soft, such an increased breadth would decrease the depth to which the wheel of a loaded barrow usually sinks into the soil, and would proportionately decrease the power required to overcome the augmented opposition. In a wheelbarrow so constructed, a man might move with more ease 8 cwt., than he now impels 5 cwt., which is a full barrow load.

If a wheelbarrow be made of wood, the feet and handles should be clasped with iron, and its joints strengthened with bands of the same metal. If so guarded it will outlast two others left unprotected.

Barrows are now very frequently employed, made entirely of wrought iron, and Mr. Stratton informs me that they weigh 92lbs., being but little heavier than common wooden barrows. The wheels are of wrought iron, 16 inches in diameter, and the ends of the gud-

geons or spingles run in brass bearings. This reduces the friction, or makes, in customary parlance, the barrow "run light." The face of the fellows is from $\frac{1}{2}$ inch to 3 inches, according to order. They seem to have been approved by those who have used them, both in this country and in the West Indies, but I have never had an opportunity myself of testing their qualities.—*Gardener's Almanack.*

AIR CHURN.—Some time ago we gave a notice of a newly invented churn, called the "Atmospheric Churn." The principle of its action, in bringing butter, was the forcing a stream of atmospheric air through the cream during its agitation, while being churned. It was a patent, and it is said a right to make and vend it in a single state, has been sold for ten thousand dollars.

It seems, however, that the principle of forcing air through cream, in the process of butter making, is not new. If this be the fact, all that the patentees can hold, is their *mode* of forcing the air through, and not the principle of it.

Mr. Nathan N. Barlow, of Homer, N. Y., has published a communication in the last Boston Cultivator, on the subject of atmospheric churns, accompanied with a drawing of one, which he says he invented in 1836. He found, by experiment, that although the mode he adopted brought the butter rather quicker than the common mode, he could not collect the particles of butter that formed together, into a mass without much trouble, and that the dash churn still took precedence, and he applied the principle to that. This he says was a great improvement; for it not only causes the cream to change sooner, by communicating a stronger ebullition than can be obtained from the simple dash churn, while those who have them in use, declare they obtain a larger proportion of butter, determined by actual weight.

I construct the handle of the common dash, hollow, with a ferule at the top, and insert in that ferule a valve that opens outwards, (downwards?) so that when the dash is raised, the air draws in, and when it descends, the valve closes; and thus you perceive that the air is drawn into the churn by the vacuum formed by raising the dash, and by the operation of churning there is a continual current of air passing through the cream in the churn.

We perceive, by the cut in the Cultivator, that there is a short tube inserted through the lid of the churn, through which the air escapes. Thus by using Mr. Barlow's invention, you have an atmospheric churn, which combines all the advantages of the old dash churn, with the new atmospheric action. All that you need do is to have a hollow handle made, with a valve or clapper fixed into its upper end. If you wish to be a little more systematic, you can have a thermometer set into the side in such a manner as to communicate with the cream, and by keeping the cream at a temperature of fifty-nine degrees, you will have all the requisites of a philosophical churn. Then, with a lot of good thrifty cows to yield good rich cream, and a good hand to churn, and a good neat wife with good clean hands to work it in a good thorough manner, you will have real good butter—no mistake.—*Maine Farmer.*

A PROCESS OF HARDENING HIDES.—The following patent process for hardening hides, extracted from Examiner Pag's Report, will be found not a little interesting. The hide is hardened and rendered as transparent as horn.

In the first place they are submitted to the sweating operation, or liming, for removing the hair. They are then submitted to the action of powerful astringents, such as sulphuric acid, alum or salts of tartar dissolved

in water at a high temperature. During the operation of cleaning the hides of the oil, they are rubbed or friction is applied in any convenient way, whereby the hide becomes thickened; and after this process is finished they are rinsed in warm water and dried. After being dried they are submitted to the action of boiling linseed or any drying oil, and retained in the hot oil until a yellow scum appears on the surface of the hides, when they are withdrawn. If it is desired to impart color to the material, as staining it in imitation of tortoise shell it is done while in the oil bath, and when removed from the bath it is submitted to pressure in moulds for the formation of various articles, as knife handles, &c., for the article when it comes hot from the oil bath, is very soft and pliable but when allowed to cool becomes hard and susceptible of high polish.

NEW SAW FILING AND SETTING MACHINE.—Messrs. Norton & Cottle, of Holmes Hole, have recently patented a machine for filing and setting saws, which is very valuable, enabling the operator to set and whet the teeth of saws in such a manner that every tooth will be equal in size and length, the proportion being graduated by an index, and so adjusted as to suit the teeth of saws of every description. Saws that have been used and become useless in consequence of bad filing can be recut and made as valuable as new. The set is attached to the machine in such a manner, that when the filing is completed, no alteration is required in the adjustment of the saw to complete the setting. The inventors have found, by experience, that the hardest saws can be set without breaking or injuring the teeth. Saws considered in a measure useless, having passed through this machine, are said to work perfectly easy, and perform much faster than those filed in the usual manner, and the teeth being all of an equal length, will not require filing as frequently. These machines, if not too expensive, we think will come into extensive use.—*Far. & Mec.*

SEWING MACHINE.—Mr. Letow, of this city, says the *Transcript*, has invented a "Rotary Sewing Machine," which will sew a yard a minute, with the "fast stitch" made in sewing the seams of pantaloons, &c. The workmanship is excellent; and unlike that of other similar machines, the stitch will not pull out. It seems as strong and perfect as the best sewing by hand. The machine is simple in its construction, small and portable, and not likely to get out of order. To housewives and tailors we should think the contrivance would be one of great utility.

AN ATMOSPHERIC MAIL TELEGRAPH.—Among the new things claiming a patent in Washington, is an invention of Mr. Van Vechten, of the Towando Democrat, N. Y., who claims the discovery of a plan by which mail and all express matter can be transmitted one thousand miles an hour, by means of an Atmospheric Telegraph. A tube is formed of a given size and length, and by means of an air pump, a carriage is propelled of a cylindrical form,—the air operating on a piston head or driver, which is in the rear of a train of cars.

COATING TELEGRAPH WIRES.—Mr. B. H. Green, of Princeton, has patented a machine to coat telegraph wires, after the same are stretched ready for use on the posts. The composition at once insulates the wires, and prevents them from rusting. The machine, weighing about eight pounds, is hung on the wires, and drawn along by a cord from post to post. The brushes used in coating supply themselves with the composition.

Domestic and Miscellaneous.

SPEAK GENTLY.

BY D. BATES.

Speak gently!—It is better far
To rule by love, than fear—
Speak gently—let not harsh words mar
The good we might do here!

Speak gently! Love doth whisper low
The vows that true hearts bind:
And gently friendship's accents flow;
Affection's voice is kind.

Speak gently to the little child!
Its love be sure to gain;
Teach it in accents soft and mild;—
It may not long remain.

Speak gently to the young, for they
Will have enough to bear—
Pass through life as best they may,
'Tis full of anxious care!

Speak gently to the aged one,
Grieve not the care-worn heart.
The sands of life are nearly run,
Let such in peace depart!

Speak gently, kindly, to the poor;
Let no harsh tone be heard;
They have enough they must endure,
Without an unkind word!

Speak gently to the erring—know,
They may have toiled in vain—
Perechance unkindness made them so;
Oh win them back again!

Speak gently! He who gave his life
To bend man's stubborn will,
When elements were fierce with strife
Said to them, "Peace, be still."

Speak gently!—'tis a little thing
Dropped in the heart's deep well;
The good, the joy which it may bring,
Eternity shall tell.

ACCIDENTS IN THE FAMILY.—Fractures.—The most inexperienced eye can often detect that a bone is broken, for sometimes the skin is wounded, the muscles are torn, and the bone is plainly seen, with perhaps one end protruding through the wound; but independent of this, when the skin is not broken, the limb is evidently seen to be deformed, bent, one portion forming an angle with another, and it is obvious this cannot occur without fracture of the bone. But whether a fracture is plainly discerned or only suspected, the treatment to be employed till the arrival of a medical man is very simple. The limb, if it be a limb, is to be laid in the position easiest to the patient: the easiest position must evidently be that in which the limb is, as nearly as possible, in its natural condition, when the broken bone has no weight to support, and the ends of the bones are prevented from rubbing on each other and the surrounding parts. Therefore, if the leg be broken below the knee, the plan is to put the leg and thigh quite straight, while the patient lies on the back; but if left to itself in this position, the foot must evidently fall to one side or the other, and turn one broken end of the bone upon the other, so it is necessary to

keep the foot straight up, either by holding it there, or by means of pillows placed along each side of the limb; and it may be convenient to know that, when the assistance of a surgeon cannot at once be procured, very excellent pillows may be formed extempore, by making some large linen bags, and half filling them with sand, previously dried and sifted; one large bag should be laid under the leg from the knee to beyond the heel, and depressions made in it for the calf and the heel; two or three other bags, longer and less broad, should then be laid on either side of the straightened leg; and by this means the limb is kept quiet, and in a convenient position, till such time as the surgeon can arrive and "set" the limb by applying splints, which are merely mechanical contrivances, of a less rude kind than the sand pillows described, but serving the same purpose, viz., to keep the ends of the bones together without permitting movement.

Again, when the collar bone is broken, and which may be suspected when the patient cannot raise the hand to the head, it is obviously very important to take off the weight of the arm by means of a sling, and this often gives much relief. A sling should also be used if a fracture of the upper arm is suspected. If a fracture of the lower arm is suspected, the best way is to lie down in bed, and to place the fore arm on the large sand-bag already mentioned, with the arm bent, and the thumb kept up, or, indeed, in any easy position. With regard to all fractures, it is difficult to go wrong, if it be remembered that the principle is to put the limb in the position it would be in were it not broken, and to prevent one end of the broken bone from rubbing upon the other. If the surgeon cannot at once attend, it is often very useful to apply cold water or cold lotions continually to the part, by means of linen rags, to keep down the inflammation, in addition to employing the means just mentioned.

Dislocations.—When a limb is out of its socket, it is advisable to replace it as soon as possible, and therefore medical aid should be immediately sought for; beyond this simple remark we shall say nothing, because without much description it would be impossible to tell when a dislocation had occurred; and even then such imperfect knowledge would be dangerous, as a dislocation might be mistaken for, or complicated with, a fracture, and the remedies necessary for the former would do incalculable mischief to the latter.

Contusions, or Severe Bruises.—In all contusions the dark appearance, and the successive changes of colour which occur in this, are owing to blood poured out from ruptured vessels. In the treatment of contusions, the first thing is to keep down inflammation by means of leeches, cold evaporating lotions (such as one part of spirit of wine and six parts of spirit of Mindererus), and to mitigate pain by laudanum fomentations in the intervals of the applications of the lotions. When the colour begins to change, the absorption of the blood may be accelerated by rubbing the part briskly with camphor liniment, or any common stimulating application.

Sprains.—In the treatment of sprains the most agreeable remedy is rest, with constant application of warm flannels dipped in warm laudanum, or warm poppy fomentations; afterward the part may be bandaged with a broad linen roller.

Wounds.—When a severe incised wound (*i. e.*, a cut with a sharp instrument) has been inflicted, and medical attendance cannot immediately be obtained, the attention must first be directed to the bleeding: supposing the wound to be on the arm or leg, if there be a mere oozing, a simple trickling of the blood down the limb, then it will probably soon stop of itself; linen dipped in-very cold water may be applied, and it is of great importance to elevate the limb, so that gravity may not assist the flow of blood: thus if the wound be on the leg, the person should lie on the bed, and the

leg be raised high on pillows; if the arm be the part injured, it should be held above the head; but, supposing the flow of blood to be more violent, supposing it to gush out in a large stream, as it would from a large cut vessel, it is necessary to stop such a jet, else so much blood may be lost as to induce alarming fainting; the best plan is to put the finger or fingers boldly into the cut, and press upon the part from which the blood seems to come without any regard to the pain it may give the patient; the finger must not be removed till the surgeon arrive and tie the wounded vessel with a ligature. When the bleeding has stopped, or nearly so, the next object is to bring the sides of the cut into contact, so that they may unite; this is done by means of adhesive plaster, long stripes of which are applied, so as not merely to cover the wound, but to draw its sides together; a very little reflection will easily show any one how a particular cut is to be *dressed*, as the covering it with plaster is technically termed. If the wound be not merely a simple cut, but complicated with a severe bruise, the straps of plaster must not be firmly applied, the sides of the cut must not be forcibly pulled together; indeed if the contusion be very great, and the bleeding moderate, it may be better not to apply plaster at all, but to use warm poppy fomentations for twenty-four or thirty-six hours, or to apply a bread and water poultice.

Scalds and Burns.—*Scalds*, when caused by boiling water, will, it is obvious, be always the same degree of severity; directly a scald has happened, it is advisable to prevent the action of air upon it, and this is done by sprinkling it thickly over with flour, or covering it with cotton wool, which must not be removed till the scald is well, which will be probably in ten days or a fortnight. When scalds are caused by water not boiling, the lead liniment recommended for slight burns is the best application.

Burns, are much more difficult to treat, as they may be of very different degrees of severity; in the slightest kinds, in which there is merely redness and blistering of the skin, cotton wool or flour may be used, as in scalds; or the following liniment may be constantly applied, viz.:—Take of undiluted Goulard's solution of lead (liq. plumb. diacetatis), $\frac{1}{2}$ ounce; olive oil, $\frac{1}{2}$ ounce; water, 8 ounces; mix the oil and lead solution, shake them well together, and add the water; make a liniment, to be applied by a camel's hair brush to the burned places, or spread upon linen and applied to the parts.

If the burn be more severe, and if a part or the whole of the substance of the skin be destroyed, the turpentine liniment is preferable; if this cannot be obtained from a druggist, then flour should be applied as before. When flour is used to burns and scalds, and the part is kept quiet, the pain soon ceases. If after a burn the face be deadly pale, and the pulse unfelt, a tea-spoonful of wine or brandy, according to the age of the child, should be given from time to time.

Means to be used in Recovery from Drowning and Suffocation.—When a person has been taken out of the water, and is insensible, he should be conveyed as speedily as possible to the nearest house or cottage; but if there be no residence near, that is to say, within two or three minutes' walk, it is necessary to use the measures for restoring animation on the spot; although recoverable when taken from the water, the patient may die in ten or fifteen minutes' transit, for want of certain necessary measures. It is necessary that every body should know that death occurs in drowning because the water prevents the entrance of air into the lungs; the small quantity of water which gets into the lungs is of no consequence, and still less that which passes into the stomach, which occurs during life, or if the body be not drowned alive; consequently, the direction sometimes given in old books of holding the head down, in order to *drain off* the water, is not only

useless, but positively hurtful; but if death occurs from the want of air, it is obvious that the thing needful is to restore air to the lungs as fast as possible, and this is done by artificial inflation. The patient should be laid in the bed, and hot bottles may be applied to the feet; but while these are getting ready inflation must, if possible, be commenced: in the absence of a regular apparatus, it can be readily performed with a pair of bellows; one person should close the mouth, and one the nostril of the patient very accurately, and in the open nostril the muzzle of the bellows should be inserted by another person; then the nostril should be pressed round the muzzle, so that when the air is blown it may pass *through* the nose, and not out into the apartment; directly the position is rightly attained, the bellows must be worked, and the air from them will pass into the lungs; the blowing must be very gentle, else some harm may be done to the structure of the lungs; the rising of the ribs will at once announce that the chest is filled with air; then the bellows must be removed, the mouth and nose opened, and the abdomen and ribs pressed upon so as to expel the air; then the bellows must be used again in the manner described, and the series of changes persevered in for a long time, or till recovery occur; during this time warmth may be applied by means of hot bottles, friction, &c. When a house is some way off, and the bellows cannot be procured, inflation may be performed by any person closing the nostrils of the insensible man, and then applying his mouth that of the patient and blowing into the lungs, then pressing down the ribs as before to expel the air, and then blowing in again. Before the operator breathes air in, he should make three or four deep inspirations and expirations, so as to change the air in his lungs, and get it as like atmospheric air and as free from carbonic acid gas as possible. These means should be persevered in for a long time; hope should not be given up, for recoveries have occurred under very untoward circumstances.

Suffocation.—In many cases the inflation described above is the remedy applicable here also; thus, if a person be suffocated in a brewer's vat, or by any mephitic gas, the body should be brought into the air, and the above-mentioned process immediately be had recourse to; medical aid, of course, will always be speedily obtained.

[For the recovery of persons drowned, or suffocated by non-respirable gases, experience has shown that to throw suddenly and violently several buckets of water successively against the spine is a mode of concussion which will be found successful if life be not extinct. This method of treatment is of vastly more importance than the inflation of the lungs by bellows, rolling the body upon a barrel, &c., neither of which can be relied on with half the certainty of resuscitation. So soon as by this method the signs of life become unequivocal, by commencing respiration, groans, or involuntary motions of the head or limbs, indicating sensibility to the concussion upon the spine, the body should be wrapped in blankets, and heat applied, as directed in the foregoing section.]

THE SCENERY ON THE ST. LAWRENCE.—Lofty and foaming are the surges which a gale of wind raises on the wide surface of Lake Ontario. The traveller from Toronto to Kingston is quite as liable to certain disagreeable sensations as his friend on board the Atlantic liners. After a night of decided misery, how delightful it is to rise out of bed, ascend to the hurricane deck of the mail steamer, and find her ploughing her way through calm waters between those lovely wooded islands which defend the quays of the latter city from the swell of the lake. Kingston is situated on an imposing eminence at the point where the majestic St. Lawrence flows out of Ontario in a stream twelve miles

wide. The morning was without a cloud, the sun pouring down his rays from a summer sky, as we steamed past the batteries of Fort Henry and entered the region of the "Thousand Islands." The river, of great depth, yet clear as a Highland stream, reflected the foliage of the trees in its glassy surface, and gently laved the rocky banks with the waters which were displaced by the revolving paddle-wheel. This archipelago, it is said, contains 1,500 islands, a considerable number of which are low and densely wooded, but the greater part are composed of bold cliffs, rising abruptly from the water's edge in most romantic forms. The caverns and grottoes, the deep arbovitæ groves, the natural quays of rock, the pine woods, the odoriferous banks of wild flowers, the maple shades, the creeks and capes and promontories of these islets, vividly recalled to our mind the descriptions of Fairyland, that mysterious paradise which filled us with such varied emotions in the days when we were young. Well might the wandering Algonquin steering his canoe in these channels, before the white man drove him to the north, murmur a prayer to the Great Spirit that he would inhabit a like lovely region for ever after death. On passing this Canadian Eden, the scenery of which is unequalled on any of the American rivers, the St. Lawrence contracts to about two miles in width, and flows on majestically between well cultivated banks. This is the only part of the frontier where the provincials can bear comparison with their democratic neighbours in point of enterprise and prosperity. The British villages are actually about as populous as those on the American side. Brockville and Prescott are thriving little towns, rivalling even the bustling Ogdensburg, a place of considerable trade in the state of New York. The appearance of the river here is truly magnificent, as it sweeps swiftly along in one unbroken stream of crystal-like purity more than a mile and a half wide. A very short way farther down the channel contracts again, the current becomes stronger, and a certain bustle on board the steamer warns the passengers that "the rapids are near." A sudden bend, meanwhile, revealing the commencement of the Galop Falls, the least important of the obstructions to the navigation. Not many miles below them, a strong force of sailors again musters at the wheel, the waters acquire renewed vigour, and the steamer, like an Indian on the track of his enemy, darts down the splendid rapids of Long Sault. Away she goes on the top of the angry billows, scarcely avoiding the sharp pinnacles of rock which rise out of the foam in frightful proximity to the vessel. Dark forests nod funereally over the boiling waters, which are now tossed aloft by some sudden rock, and anon rush with fearful impetuosity in the circle of a whirlpool. Several islands divide the river at this point, on passing each of which a momentary glance is obtained of the roaring cataract beyond them. The quiet surface of the Lake St. Francis, an expansion of the river below Cornwall, affords a striking contrast to the stormy scene above. Here you meet the upward bound steamer, and pass the rafts of timber on their way to the depot at Quebec. At Coteau du Lac, the roar of angry waters again is heard, and the frail bark once more quivers under the buffeting of the waves. The exciting rapids called the Cedars and the Arcades follow in quick succession. At one spot during the descent of the former, there is a whirlpool close to the navigable channel, into which a single erroneous turn of the helm would hurry the vessel, to be dashed in a few moments to a thousand pieces. What a sublime spectacle it is to witness the fury of the impeded waters from the deck of the steamer, as she pursues unscathed her serpentine course in the midst of danger! At Lachine, on the opposite side of the Lake St. Louis, the traveller disembarks, and after a short ride comes in sight of the lofty towers, which proclaim to

the inhabitants of wide spread plains, that the exiles of the Roman Catholic Church are predominant at Montreal.—*Correspondent of the Scottish Press.*

A BIVOUAC IN CANADA.—Baptiste, halting, strikes his axe in a tree, and tells us we shall in that spot spend the night. Whereupon the half-breed and the Canadian, leaving their tabogins, cut a couple of splinters out of the next pine, which, with their axes, they fashion into rude spades, and clear a space in the snow about twelve feet square, and three or four in depth. Meanwhile Baptiste has cut down some firewood, which is laid across the middle of the space, and has also, by some inscrutable means, discovered a spring in the neighbourhood, from which the kettle is filled, and hung over the fire depending from a long stick, the further end of which is thrust in the snow. Jenkin and I have employed ourselves in cutting down all the young fir-trees—*sapins*, the Canadians call them—within reach; and stripping off the branches, which look like plumes of green ostrich feathers, we strew them on each side of the fire for a bed, stick some around the snow walls of our residence to act as tapestry, and thatch a small roof overhead, to keep off falling snow, with the remainder. The space on one side of the fire is allotted to our retainers, the other to us; and, spreading a buffalo robe over the sapins, we lie down and change our wet mocassins and leggings; then we unpack the tabogins and pile our provisions around—the flour, biscuit, coffee, pepper, tea and coffee, butter, and onions. We had brought a small keg of brandy with us, which was always stuck in the snow over Jenkin's head. Boniface makes pea soup; Da Fini fries pork and onions in the pan; we unpack our canteen and get our knives and forks ready. But Jenkins and I hated fat pork like a couple of rabbis, but we managed, notwithstanding, to make a dinner; and then, tired from our unusual exertions, rolled ourselves in our blankets, stretched our feet to the fire, and slept like tops, leaving our three friends jabbering and eating on the other side of the fire in full vigour.—*Fraser's Magazine for January.*

KILLING A MOOSE-DEER.—When we had gone about four or five miles, Baptiste suddenly stopped, and, pointing to the snow, uttered the word "*Ravage*." We all rushed eagerly up, and there, in the snow, were the tracks of the huge animals—a deep furrow, indented every foot or so with the print of their hoofs. Instantly our guns were loaded, and off we went like maniacs, Baptiste leading, the rest scrambling and panting along, sometimes losing a snow-shoe, and stooping to tie it (no easy matter when the strings and your fingers are both frozen), sometimes slipping into some treacherous hole. At last the Indians stopped, and looked round at us with a face of disappointment, which, on reaching him, was easily accounted for; for a line of snow-shoe tracks came up from another direction, and then went off on the *ravage*—we had evidently been forestalled. Very crest-fallen and ill-tempered we followed in their path, to have the melancholy satisfaction of discovering the authors of our disappointment—our "infernal sell," as Jenkins called it—expecting to find them cutting up their game. But while running on the tracks we saw a fire to the left, and, going up to it, found two ragged Irishmen sitting by it broiling venison. They told us they had killed the moose, two in number, half a mile further on, and had returned here to encamp. Neither of them had a hat, and their clothes were too thin and ragged to defend them even from the cold of the same season in England; yet, thus insufficiently clad, the hardy fellows had ventured into the forest to take Winter, in his sternest mood, by the beard. Jenkins was very indignant at the "bogtrotting rascals," as he called them, daring to kill "our moose,"

and uttered some sentiments on the occasion, quite in unison with the conqueror's forest laws. However, his bark was worse than his bite, for he presently proposed giving the said bogtrotters a horn each of grog, which the poor fellows were very glad of; greatly to the disgust of Mr. da Fini, who had conceived a violent hatred towards the unfortunate men, and scowled at them like a demon: his indignation afterwards reached a climax on our giving them peas to make soup.—*Id.*

FOOD OF THE CHINESE.—A late traveller Mr. Williams, contradicts the popular impressions that kittens and puppies are an ordinary food of the Chinese. He says:

"A few kittens and puppies are sold alive in cages, mewling and yelping as if in anticipation of their fate, or from pain caused by the pinching and handling they receive at the hands of dissatisfied customers. Those intended for the table are usually reared upon rice, so that if the nature of their food be considered, their flesh is far more cleanly than that of the omnivorous hog; few articles of food have, however, been so identified with the tastes of people as kittens and puppies, rats and snails, have with the Chinese. The school geographies in the United States usually contain pictures of a market-man carrying baskets holding these unfortunate victims of a perverse taste, (as we think) or else a string of rats and mice hanging by their tails to a stick across his shoulders, which almost necessarily conveys the idea that such things form the usual food of the people. Travellers hear beforehand that the Chinese devour every thing, and when they arrive in the country, straightway inquire if these animals are eaten, and hearing that such is the case, perpetuate the idea that they form the common articles of food.—However commonly kittens and puppies may be exposed for sale, the writer never saw rats or mice in the market during a residence of twelve years there, and heard of but one gentleman who had seen them; in fact they are not so easily caught as to be either common or cheap. He once asked a native, if he or his countrymen ever served up *lau-shu-tang*, or rat-soup, on their tables; who replied, that he had never seen or eaten it, and added, 'Those who do use it, should mix cheese with it, that the mess might serve for us both.' Rats and mice are, no doubt, eaten now and then, and so are many other undesirable things by those whom want compels to take what they can get; but to put these and other strange eatables in the front of the list, gives a distorted idea of the every-day food of the people."

WONDERFUL DISCOVERY.—We find in the *Boston Atlas* an interesting communication from a correspondent in the copper mine region of Lake Superior. One of them details some remarkable discoveries which have been recently made a few miles interior from the mouth of the Ontonagon River:—"A large mass of native copper, the weight estimated at seven tons, was found in the loose ground. A vast amount of labour had been expended upon it. Every inch of it had been battered and hammered over, and attempts had been made to pry it up, and place it on a platform. All this was the labor of a race of beings long since passed away. There is too much skill manifested for the present race of Indians, and yet the workings are too ancient to be those of white men. Many loads of rude stone hammers are found buried below the surface—are abundant proofs that in stoning up a cellar, it was found more convenient to use them than to throw them out. Hemlock trees, two feet in diameter, and, from examination, two and three hundred years old, are growing over the workings, and have to be felled to enable the miners to excavate the earth. Remains of charred wedges, and levers, and copper gads, are found under

these trees and under the principal mass. These ancient workings can be traced for more than half a mile through the forest, and an expenditure of \$50,000 at this time would not pay for the accomplishment of the like amount of labour. Their great antiquity would seem to carry us back to other times. Yet it is not impossible that the present Indians may be the descendants of those who wrought them."

BENEFITS OF MACHINERY.—Fifty years ago wages were no better, in fact less, than at the present day, and comforts and luxuries of life were far more difficult to obtain. Articles needed by the poor man, cost in those days of comparative freedom from machinery, from twice to three times what they do now, and often more, and you will find that the greatest reductions are in those articles to which machinery has been most successfully applied.—There is no article of luxury or comfort to which machinery has been extensively and successfully applied, of which the poor man cannot now get more for a day's labour than he could before such application of machinery. Salt is now less than one-third; iron less than one-half; shirting and calicoes and cloth generally from one half to one fourth; pins, needles, shoes, hats, everything in similar proportions.

Forty years ago, such articles of use or ornament as locks were scarcely known, and could be afforded by the rich only. Farmers' waggons were chiefly sleds; their houses, cabins; their chairs, stools and benches; their bureaux, pins drove in the wall or poles hung across; and their windows often an old sheet or blanket.—Nails and glass cost money in those days, and labour commanded little.

Since machinery has been applied, better roads, turnpikes, railroads—all of which are a species of machinery—have been constructed. Steam has been made to propel the boat and the great ship, and to give power to the mill, to the jenny and the loom. Production in many articles has been more than trebled, and everything the labourer needs has fallen, while his wages have risen or remained stationary. The clock, which the farmer had not and could not afford, now adorns the mantel of his poorest tenant, and summons him to his meals.

There have been less improvements in agricultural implements than in machinery for manufacturing purposes—but this is the age of improvement. Let machinery be applied to husbandry also. Let bread and meat be as cheap as clothing, and if the distributing is not as equal as it might be, let us rejoice that if the rich man has more, so also the poor man has much more.

The cottager has now, by the aid of machinery here, what great kings had not in Africa, and what the kings of England had not before the introduction of machines. The great Alfred sat upon a three-legged stool, while many an English or American tenant now reclines on a gilded sofa. If the poor of England and America are not so well off as they should be, machinery is not at fault. It has saved them from much greater misery, and the reforms which they need are chiefly governmental and social.—*Scientific American.*

STONE CUTTING.—Mr. C. Wilson has invented a new stone cutting machine, propelled by steam, and said to be capable of doing the work of 100 men. Only one has been made, and that is in use at New Haven. It is thus described: "The cutting instrument is simply a half-dozen circular saws fastened firmly by an axle running through the centre. These saws are made very hard, and the teeth rather larger than the ordinary size. When firmly adjusted, it is forced rapidly over the surface of the stone, smoothing it very evenly."

Editors' Notices, &c.

TORONTO NURSERY.—We beg to call the attention of our readers to Mr. Leslie's advertisement in our advertising columns. Having an extensive stock of the various kinds of fruit trees, of the best varieties adapted to this climate, the genuineness and proper naming of which may be depended upon, together with the usual assortment of ornamental trees, shrubs, flowers, &c., we consider the enterprising proprietor of the Toronto Nursery highly deserving a large share of the patronage of the Canadian public. Mr. Leslie has unfortunately sustained a heavy loss by the recent burning of his extensive green-houses; notwithstanding, we are happy to be informed that he will still be able to execute any orders with which he may be favoured. We hope that so laudable a spirit of private enterprise, combined as it is in a new country with a large share of public utility, and promotive of the ornamental and beautiful, will not fail to receive its just measure of reward.

W. M. P., Cornwall.—Remittance—papers forwarded, with thanks for his friendly co-operation.

G. L., on the Cultivation of Asparagus; too late for the present number.

LEICESTERENSIS.—In consequence of the late arrival of your valuable communication, we must defer it till our next. Many thanks for your good wishes and exertions on behalf of the Agriculturist.

SKIRVING'S SWEDE TURNIP.—This valuable variety, so highly esteemed in England, may now be obtained, for the first time in Canada, at Lyman, Kneeshaw & Co.'s, of this city, who have just received their usual stock of garden and agricultural seeds direct from England.—See advertisement.

VENTILATION.—We beg to acknowledge the receipt of Mr. Sheriff Ruttan's interesting work on this important subject, which shall receive a notice in our next.

C. B., Cobourg.—The first parcels were sent to the stage office to be taken in charge by Mr. Ruttan, who was returning home. But it was found he had left, and he gave no instructions as to how they should be sent, and thinking they might miscarry or be injured, we thought it best to send them in the usual way by post. The last No. was sent by stage in a box.

C. P. J., Clarke.—Your communication on ploughing was received and laid by for correction, and when given to the printer, sufficient matter had been set up for this No. It shall appear in our next.

T. C., Guelph.—Remittance—your communication in our next.

J. R., Three Rivers.—Request attended to.

H. W., Wellington Square.—Remittance received.

N. N., Peterboro'.—ditto, ditto.

R. Y., Port Sarnia.—papers sent according to your directions, though from the difficulty of making out some of the names, it is probable errors will occur.

CORRESPONDENTS will know that their letters have been received, by the receipt of their papers, as we send to none but those who order them. It is unnecessary, as well as impossible, to notice the receipt of every letter; only those requiring reply, will be noticed in this place.

AN OLD COUNTRYMAN.—Thanks for your useful hints, and friendly wishes; the subject of *draining* is, as you say, "of the utmost importance, and forms the foundation of all agricultural improvement." We will take up the question in its details, at our earliest convenience, giving the results of our experience in reference to the *principles* of draining, expence, and the effects produced. In the meantime, we should be glad to be favoured with the opinion of such of our readers, as have practised draining in this country.

STATE OF THE MARKETS.

ENGLAND.—The *Canada* brings news from Europe, to the 10th of March. The British grain markets were dull, and prices looking down. Importations continued larger. Wheat from 6s. 10d. to 7s. 2d. per bushel of 70 lbs. Flour, 25s. to 25s. 6d. A fair trade doing in American cured provisions. We hear from correspondents, that in several parts of England the wheat was looking indifferently, suffering from the devastations of slugs, wireworm, &c. The winter had been mild and open. Much distress in the hop districts, arising chiefly from unprecedentedly depressed prices. Hops, 40s. to 50s. per cwt. Great efforts are being made for the repeal of the malt and hop duties, the influence of which is now felt to be seriously oppressive. Butcher's meat lower than for many years; from 2s. 6d. to 3s. 9d. per stone of 8 lbs. Upon the whole, the present condition of the British farmer, under the free trade policy, seems gloomy enough.

NEW YORK, March 27.—Flour dull, with downward tendency; \$5.27. to \$6.25. per barrel. Wheat, \$1.12. to \$1.30. per bushel. Rye, 60c. Corn, 50c. to 57c. Oats, 33c. to 35c.

MONTREAL, March 27.—Nothing of importance doing. Sale of Flour to a small extent at 23s., to be delivered in May.

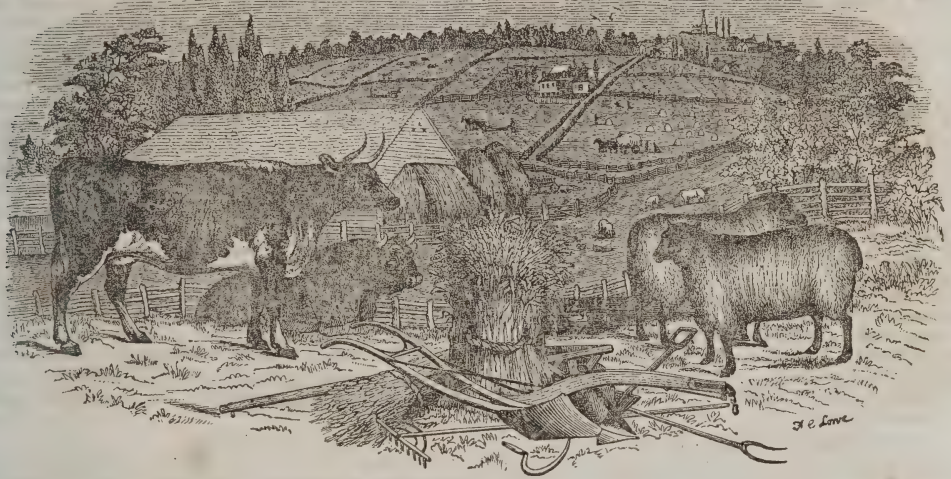
TORONTO, March 29.—But little wheat or other kinds of grain has come into this market for some time past, owing chiefly to the state of the roads, occasioned by the breaking up of the frost; yet the supply is sufficient. Prices may be said to have a downward tendency. The ice is fast breaking up in the bay, and our steamboats will be put on their different routes in a few days. Let us hope that the approaching season may restore to us a large share of our wonted animation and prosperity.

TORONTO MARKET.

MARCH 29, 1849.

Flour, per barrel of 196 lbs.	16	3	@	21	3
Wheat, per bushel.	3	6	@	4	6
Oats, per bushel, 34 lbs.	1	0	@	1	2
Barley, per bushel, 48 lbs.	1	8	@	1	10½
Rye, per bushel, 56 lbs.	3	0	@	3	4
Pease, per bushel, 60 lbs.	1	6	@	2	0
Potatoes, per bushel.	2	2	@	3	0
Beef, per 100 lbs.	12	6	@	20	0
Pork, per 100 lbs.	17	6	@	20	0
Bacon, per cwt.	25	0	@	30	0
Butter, in kegs, per lb.	0	6½	@	0	7½
Butter, (fresh) per lb.	0	7½	@	0	9½
Turkeys, each	2	6	@	5	0
Fowls, per couple	1	8	@	2	0
Eggs, per dozen.	0	5	@	0	7
Hay, per ton	40	0	@	55	0
Straw, per ton	25	0	@	30	0

CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. v. 9.

GEORGE BUCKLAND, }
WILLIAM McDOUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, MAY 1, 1849.

No. 5.

The Canadian Agriculturist,

A MONTHLY JOURNAL OF AGRICULTURE, HORTICULTURE, MECHANICAL AND GENERAL SCIENCE, DOMESTIC ECONOMY AND MISCELLANEOUS INTELLIGENCE: Published by the Proprietors, W. McDOUGALL and GEO. BUCKLAND, on the first of each month, at their Office, near the South-west corner of King and Yonge Streets, Toronto.

Subscription ONE DOLLAR, in advance. Advertisements 4d. per line each insertion

Societies, Clubs, or local Agents ordering twelve copies and upwards, will be supplied at 3s. 9d. per copy.

Money, enclosed in a letter, and addressed to the "Editors of the Agriculturist, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, need not wait to be called upon.

Payment in advance being the only system that will answer for a publication so cheap as ours, we shall send the remainder of the volume to none but those who order and pay for it.

Subscribers who desire to continue the work, will do well to send their orders without delay; for, as we do not mean to print a large edition, with the view of having a surplus, we cannot promise that at the end of two or three months we shall have any back numbers on hand.

TRAVELLING AGENTS.—Mr. T. M. MUNN is our Travelling Agent for the Eastern section of the Province; Mr. PALMER for the Northern; and Mr. JAMES WILLSON for the Western: who are authorized to receive subscriptions for last year's volume as well as for the present.

LOCAL AGENTS.—Any person may act as local agent. We hope that all those who have heretofore acted as such will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending four subscriptions. Those sending twelve and upwards will be supplied at 3s. 9d. per copy.

TORONTO NURSERY,

FOR SALE, an extensive collection of FRUIT TREES, consisting of all the choicest sorts of Apples, Pears, Plums, Cherries, Peaches, Grape Vines, Raspberries, Gooseberries, Strawberries Currants, Asparagus, and Rhubarb Root, &c.

Also, Ornamental Trees, Flowering Shrubs, Hardy Roses, Herbaceous Flowering Plants, &c., in great variety.

Descriptive Catalogues, containing directions for transplanting, furnished gratis to post-paid applicants.

GEORGE LESLIE.

March, 1849.

4

CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash Prices for 1000 bushels clean Timothy Seed; 100 bushels clean Spring Tares; 100 bushels White Marrowfat Pea; and 25 bushels Flax Seed.

JAMES FLEMING,

Yonge Street,
Toronto, Jan. 1, 1849.

Seedsman and Florist.

1

GORHAM & McDougall,
ATTORNEYS, SOLICITORS, &c.,
South West Corner of
KING AND YONGE STREETS,
TORONTO.

Deeds, Mortgages, and other Legal Instruments
promptly prepared.

PHENIX FOUNDRY,
 No. 58, YONGE STREET, TORONTO.

GEORGE B. SPENCER,
 (LATE C. ELLIOT.)

CONTINUES every Branch in the above Establishment, as heretofore; and, in addition, keeps constantly on hand a good assortment of **COOKING, PARLOR, BOX, and AIR-TIGHT STOVES**, of the most approved patterns.

Also, a Second-hand **ENGINE**, with or without the Boiler, Twelve-horse Power, will be sold very cheap for Cash or short payment.

Toronto, Jan. 26, 1849.

1-tf

MAMMOTH HOUSE,

Removed to the Store next door South of Mr. Elgie's Tavern, Market Square.

THOMAS THOMPSON is happy to inform the Public, that, by the praiseworthy exertions of his Friends, he has saved from the destructive *Conflagration of 7th April*, staple and fancy **DRY GOODS, GENERAL CLOTHING, HATS, CAPS, BOOTS, SHOES, &c., &c.**, to the amount of upwards of \$15,000! partially damaged, which will be sold at a great sacrifice. The above Stock, with the early *Spring arrivals* now opening out, will comprise a splendid assortment of *cheap and fashionable Goods*, the whole of which he is determined to have **CLEARED OUT** previous to his re-opening the new Mammoth House.

Toronto, 17th April, 1849.

5

SEVERN'S BOTTLED ALE.

THE Subscriber, having resumed his former Business in a convenient locality, with a large stock on hand, of a superior quality, and in prime condition, would hope to secure a continuance of the patronage and support hitherto conferred upon them.

J. D. BARNES,
 6, Wellington Buildings,
 Adjoining Mr. Sterling's, King-st.

Toronto, Jan., 1849.

1

HOME DISTRICT
AGRICULTURAL SOCIETY.

THE SPRING EXHIBITION of this Society will be held in the City of Toronto, on **WEDNESDAY, May 9, 1849.**

GEO. DUPONT WELLS,
Honourary Secretary.

PAPER HANGINGS!

A LARGE and CHOICE assortment of **PAPER HANGINGS**, of the *newest styles of patterns*, for Sale, wholesale and retail, by

BREWER, McPHAIL, & CO.,
 46, King Street East.

Toronto, April, 1849.

5-1in

BRONTE MILLS FOR SALE.

THE Property consists of sixteen feet privilege on the Twelve-Mile-Creek on the Lake Shore, in the Township of Trafalgar, and about seventy-five acres of good cleared farm Land; a large stone and frame Woollen Factory, 82 feet by 32 feet, and three stories high, capable of being easily converted into a Flouring Mill; a Grist Mill, with one run of Stones, Smut Machine and all requisites; Two Saw Mills, with Circular Saw and Lumber Yard Railway; a Blacksmith's Shop and several Dwelling Houses. This property is now let to a yearly tenant for £200 per year, and would bring on a lease £250. Price £2,500, of which only £100 would be required down; the residue might be paid by instalments, as agreed upon.

ALSO,

A Privilege on the same Creek of 12 feet, next above the Mills, with about 75 or 80 acres of land, mostly cleared and in cultivation, and an excellent Mill Site, with good Roads. Price 1000, of which £300 would be required in Cash; the remainder by instalments. The option of this part of the property is offered to the purchaser of the first, and, if not taken, it will be sold separately.

ALSO,

Adjoining the above, a Farm of about 70 acres, in full cultivation, with a large unfinished Dwelling-House thereon, and an Orchard of four acres of grafted Fruit Trees. Price £700, of which only £200 would be required immediately; the rest in ten years. The whole of the above property will be sold together, if desired. For particulars apply (post paid) to **S. B. HARRISON, Judge H. D. C., Toronto.**

Toronto, March 1, 1849.

STOVES! STOVES!! STOVES!!!

J. R. ARMSTRONG,
CITY FOUNDRY,

No. 116, Yonge Street, Toronto,

HAS constantly on hand **COOKING, BOX, PARLOR, and COAL STOVES**, of various patterns and sizes; *very cheap for Cash.*

Also, a New Pattern **HOT-AIR COOKING STOVE**, just received, taking three-feet wood, better adapted for the country than the Burr, or any other Stove now in use. It has taken the First Premium at every Fair in the United States, where it has been exhibited.

Ploughs, Sugar Kettles, Grist and Saw Mill Castings, Steam Engines, Sleigh Shoes, Dog Irons, and a general assortment of Castings.

Toronto, Jan. 26, 1849.

3

SHOE AND LEATHER STORE.

DANIEL FARAGHER begs to inform his friends and customers that he has opened a *Shoe and Leather Store*, at No. 22½, Yonge Street, Toronto, where he will be prepared to furnish all kinds of work in his line at the most reasonable prices. Having a Tannery of his own in active operation, he can supply the trade and others with as good an article of Leather, and at rates as Low, as can be obtained elsewhere.

DANIEL FARAGHER.

January, 1849.

1-tf

MESSRS. DENISON & DEWSON, ATTORNEYS, &c., *New Market Buildings, Toronto.*

January 26, 1849.

2

THE CANADIAN AGRICULTURIST.

VOL. I.

TORONTO, MAY 1, 1849.

No. 5.

THE POTATO DISEASE.

If the nature of the potato disease and its remedy are destined to remain in impenetrable obscurity, it will hardly be said to be on account of any want of interest felt on the subject. Perhaps no question connected with vegetable nature ever before elicited so much public attention, and called into the field of observation so many practical and scientific men. From all that we can learn, this destructive malady appeared in a much more mitigated form in Upper Canada, during the past year, than it did in 1847, and a larger amount of potatoes have been kept during the winter, and appear generally to be in a sound condition. The cultivation of this root will probably be more extended this season, and we advise our readers to be extremely careful in selecting seed, in preparing and manuring the land, and to commence planting as early as possible.

Notwithstanding these favourable symptoms the condition of the potato in this country, we have no guarantee for its healthy restoration, we find that in several parts of England, where the disease previously seemed to have declined, yet, in 1848, it reappeared in as bad form as ever. This fact seemed to indicate, at the visitation might become more or less permanent, and consequently but little reliance for the future can be placed upon the cultivation of this crop. Ordinary means of investigation had failed or become exhausted, and then appeared, after a lapse of four years, almost as much at a loss, as to the nature and management of this malady, as they were at its commencement. From the discordant results and conflicting testimony that had been collected, a discovery of the cause of the disease appeared almost hopeless. Scientific men were pressed with the supreme importance of accurate systematic observation. Dr. Lindley, in whom no one ranks higher as an authority on this subject, accordingly addressed, last autumn, a series of printed questions to a great number of persons in all parts of the United Kingdom, who were likely to communicate re-

liable information. No less than 999 of these forms were filled up, and returned to London: 679 from England, 182 from Scotland, 92 from Ireland, 32 from Wales, and 14 from persons whose residence could not be ascertained. The information thus collected must possess the highest interest, and form a permanent record of authenticated facts. The details, however, are far too lengthy for the pages of the *Agriculturist*; we will, however, endeavour to give our readers some of the more important results of their scientific classifications, as they appear in several articles in recent numbers of the *Gardener's Chronicle*. It appears that the examination, classification, substracting of the returns occupied a clerk and his assistants 16 weeks!

Much of the information is condensed in a tabular form. The first table comprises the *effect of the different periods of planting*, to which is appended the following memoranda:

“ENGLAND.—*Time of Planting*.—February planting much recommended; said to be more beneficial than autumn planting. Some say February planting produces a heavier and as sound a crop as autumn planting; but the returns show that autumn planting escaped disease, when February planting suffered a little. In some of the northern counties, where there was comparatively little rain, April and May planting succeeded well. *Time at which the crop was attacked by blight*.—Hardy or coarse growing varieties, in some cases a fortnight later than fine varieties in being blighted, and do not decay so rapidly. Dry, light, and well exposed fields generally about a fortnight later in being blighted than close sheltered situations. In some places where lime was used, even on heavy land, (if dry,) the blight was about a fortnight longer in appearing. SCOTLAND.—Autumn planting not recommended; said by some not to produce such a good sound crop as spring planting. IRELAND.—Autumn planting not better than early spring planting, according to correspondents in Kilkenny and Down”

The second table shows the *effect of soils and manures*, and the third relates to the *comparative power of resisting the disease possessed by certain varieties*. It is stated:

“That when *Peat moss* suffered it had been clayed or marled. New heath land, planted in May, was half diseased. *Light lands* suffered much when highly manured, and planted late. *Heavy lands* suffered

little if naturally dry or well drained, or planted early with manure that does not stimulate, such as loose litter, ashes, or without manure."

[To be continued]

NORMAL SCHOOL, TORONTO:

We are glad to find that the science of Agriculture has obtained a footing in this valuable Institution. His Excellency the Governor-General intimated to the Board of Education, some time ago, his desire to offer two prizes, to any two pupils who might pass the best examination in Agricultural Chemistry, Vegetable and Animal Physiology, and the Chemistry of Food.

At the recent half-yearly examination, his Excellency's liberal offer was carried into effect. The competitors amounted to no less than thirty-two, several of whom were females. The pupils were allowed four hours in each of two days to return written answers to a series of printed questions, amounting to sixty-six, and embracing the most important principles of Chemistry, together with Vegetable and Animal Physiology. We should state, that the pupils, during the time of writing their answers to the questions, were under the eye of one of the Masters, and were not allowed the use of any text-books or notes.

The first prize (consisting of a judicious selection of Educational and Scientific Works, to the amount of five pounds in value) was awarded to Mr. Abraham Diamond, of the Midland District. The second prize (consisting of books to the amount of three pounds) was given to Mr. James T. Pennock, of Johnstown District, both natives of Canada, and the sons of farmers. The prizes were presented by the Honourable Chief Justice Robinson, before a large and respectable audience, accompanied by some appropriate remarks, in his Lordship's usual chaste and felicitous style. Although there was, of course, much inequality in the attainments of the pupils, yet, when it is considered how fully and correctly many of the questions were answered by a considerable number, most of whom had devoted only a small portion of one Session of five months to the subjects which the examination embraced, we feel pleasure, as one of the examiners, in saying, that the result was equally creditable to the efficient instructions of the Teacher and the industry of the pupils. We were particularly pleased with the returns of several of the females.

The following gentlemen were appointed by the Board as Examiners:—

Thomas Jaffray Robertson, Esq., Head Master of Normal School.

Henry Youle Hind, Esq., Mathematical Master, Lecturer in Chemistry, &c.

Henry Holmes Croft, Esq., Professor of Chemistry, King's College.

Edward W. Thompson, Esq., President Home District Agricultural Society.

Francis Neale, Esq., A.M., Vice-President do. do.

George Buckland, Esq., Secretary to the Provincial Agricultural Association.

ADVANTAGES AND DISADVANTAGES OF SUBSOIL AND TRENCH PLOWING.

Subsoiling, we are to understand, consists of loosening the ground below the depth it is ordinarily disturbed by common tillage. A heavy plow is first run along the field, say from six to ten inches deep, and is then followed, in the bottom of the same furrow, by a subsoil plow, which has no mould board, stirring the soil to a depth of six or seven inches more.

The reasons generally stated in favor of the system, by its advocates, are the following:—1st. That where there are drains in a field, subsoil plowing facilitates the escape of water into these drains. 2d. It deepens the actual thickness or amount of soil to the extent of from eight to sixteen inches; thereby affording double nourishment to the crops. 3d. It increases the heat or temperature by lessening evaporation. 4th. In dry summers, when crops are parched, the increased thickness of soil, which causes the roots to penetrate to a greater depth than usual, enables the crop to withstand the drought.

The chief objections urged against subsoiling are, 1st. The extra labor of men and horses. 2d. From the tardiness of the operation, it drives out of season the other work of the farm. 3d. On light, leachy soils, it is attended with little or no benefit, but on the contrary, is injurious in causing rains and liquid manure to descend more readily beyond the reach of the roots of the plants.

By *trench plowing*, the soil is cast up to the surface, and is either benefited or injured thereby, according in the nature of its constituents and the manner in which it is trenched, after it is turned up. For instance, there is often contained in subsoils, a considerable proportion of matter, called by chemists, *protoxide of iron*, which is readily dissolved by rain water, and in that state, is poisonous to plants, if directly applied to their roots; but if these subsoils are opened to the influence of the atmosphere, this substance will gradually be converted into *peroxide of iron* (common red iron rust), and may be applied to crops without injury. It often happens, also, that some subsoils embrace fragments of rocks containing sulphur combined with iron (sulphur of iron), which, on exposure to the atmosphere, is changed into green vitriol or common copperas (sulphate of iron), and in that state is quite as unfit for the food of plants as the protoxide of iron. Both of the two last-named salts, however, when brought into contact with lime, or any of the alkaline carbonates, are easily decomposed, changing the iron into a peroxide, which is not only harmless to plants, but in some cases beneficial to them. The sulphuric acid, contained in the copperas, also, at once combines, in definite proportions, with the lime, or other alkaline bases, spread upon the soil, and forms in one case, sulphate of lime.

(gypsum or plaster), and in others, sulphates of soda, potash, &c., according to the nature of the alkaline carbonate applied, the fertilizing influences of which are too well known to require repetition here. Hence, the good effects which often occur from abundant top-dressings with air-slacked lime, or of wood ashes, carbonates of soda, potash, &c., on land that has been trenched or deeply plowed.

If a soil be sandy, gravelly, or light, with little or no sod on its surface, or vegetable matter beneath no particular advantage will result from trenching, unless there be plowed under a liberal supply of course barn-yard manure—green clover, vetches, buckwheat, or weeds—dry leaves, grass, stubble, straw, or some compost rich in animal and vegetable salts; and then it will often become necessary to add a slight top dressing of guano, poudrette, or some stimulating manure, in order to give vigor to the infant plants. But if the upper soil be deep, and is interwoven with the roots of grass, weeds &c., it may be turned under from a depth of ten inches to a foot; and so long as this vegetable matter remains in the soil, it will serve as a proper food for other plants. In short, if due attention be paid to the animal manures, if the ground be hot and sandy, trench plowing will make it cool and moist; and if it be strong and clayey, it will open it and keep it loose, rich, and mellow.—[Am. Ag.]

LOWER CANADA AGRICULTURAL SOCIETY.

The Annual General Meeting of the Lower Canada Agricultural Society took place at their Rooms in that City, on Saturday, 24th March last, in conformity to the Act of Incorporation, and to the Rules of the Society. The Hon. A. N. Morin, President of the Society, took the Chair, and addressed the meeting, giving a brief outline of the proceedings of the Society for the past year, and their future prospects.

REPORT.

The President and Directors of the Lower Canada Agricultural Society, for the past year, beg to submit to this General Meeting the following Report:—

And First—they congratulate the friends of Canadian Agriculture, assembled here to day, upon having a place of meeting exclusively appropriated to the interests of Agriculture and the advancement of its improvement and prosperity. For the first time in Lower Canada, an Agricultural Library has been commenced, and even at this early period of its establishment, contains, as you may perceive, many excellent books in both the English and French languages, on the science and practice of husbandry, and several of the most valuable periodicals, with a prospect of the number being augmented continually, affording to agriculturists, becoming members of the Society, constant access to useful information on the subjects of their profession, that is not to be obtained elsewhere in Lower Canada.

The seed store, opened in the same premises by the Seedsman of the Society, affords an opportunity of purchasing seeds of every species and variety on favorable terms, as well as offering the farmer an opportunity of showing any superior grain he may have to dispose of as seed to those who may require to purchase seed. There is a further advantage, that foreign seeds of any kind may be obtained through the Seedsman, by giving an order in due time. A show of implements is commenced, which there is every reason to expect will be well furnished before the next annual meeting. All these are direct advantages. The next subject they would advert to, is the Agricultural Journals, published both in the English and French languages, for the past year and up to this period of the present. It is needless to state to you what may be the merits or defects of these Journals, as no doubt you are all subscribers to them and perfectly acquainted with their character. The Directors regret to have to report that a large portion of the subscriptions remain unpaid, and it is an extraordinary circumstance, that while in some parishes and sections of the country, nearly the whole of the subscriptions are paid up willingly, in others scarcely any have been paid. The Directors, however, have reason to believe that the Journals have had a most beneficial influence among the farmers, and disposed them to introduce improvements. The expense of the Journals and the state of the subscription list will be submitted to you to-day.

The Agricultural Journals were the only means of maintaining a connection and correspondence between the Society and the agricultural classes, and each of the great National Agricultural Societies of the British Isles, publish a Journal, and regard it as the chief means of connection with Agriculturists and of advancing the improvement of husbandry. The Society have been organized and incorporated by the Legislature, and have so far proceeded in the great work they proposed to accomplish. If they meet with any check now, it will be solely attributable to the want of adequate support. The objects for which they have been organized are of as much importance to the country now to be attained, as they were two years ago, and the Directors of the Society have, so far, done all in their power, in proportion to the means at their disposal to attain these objects. They have done more than could have been expected, by incurring a very considerable responsibility in publishing the Agricultural Journals, and forwarding them to every parish and the Commissioners of every country school in Lower Canada with a view of awakening a spirit of improvement in the general system of

Canadian husbandry, and that they might be read in the schools by the scholars who were hereafter to become farmers. This measure was adopted as the only means possible of connecting the Society with the rural population throughout the Eastern section of the Province, and to show them that there was a Society organized, who however remote and separated by distance from them, were anxious for their welfare and desirous that they would introduce such judicious changes in their modes of farming as would likely prove advantageous to them—and the Society had the more confidence in the success of their measure, because there could not be any suspicion of self-interested motives attached to their efforts by the rural population—whose perfect confidence is so necessary to any Society that would propose changes in a system farmers were so long accustomed to follow. The Society were desirous of being regarded by the rural population as the Society of the people, actuated by no other motive but that of promoting their prosperity and augmenting their means of comfort and happiness; by suggesting the means to them by which they might attain these benefits from the resources within their own power. The proposition is generally admitted that agriculture is, and must be, the main stay of prosperity to this Province, and it may be presumed there is not one individual at this meeting that does not entertain this opinion. This Society, as the Agricultural Society of the people, cannot possibly have any other object than the improvement and prosperity of agriculture as the best means of giving strength and stability to the main stay of Canada; and if they will only follow the example of the great Agricultural Societies of the British Isles, they will confer a greater amount of unmixed good on the rural population and upon the country generally, than could be expected from any other measures possible to introduce. One of the principal objects for which this Society was organized was the establishment of Model Farms and Agricultural Schools. To accomplish this, considerable funds would be required. The question then appears to be—would such Schools and Model Farms produce general benefit to the country proportioned to the expenditure that would be necessary for their establishment? The Directors think that they would, and that such establishments would, under judicious management, soon pay their own expenses, and be of incalculable benefit to Canadian farmers, and to the country generally, affording a suitable education, and practical instruction in the art of agriculture to young farmers, and instructing laborers, or those

who were to be dependent upon the wages of labor, in all the various works of the farm; and those again who would be educated and instructed at these establishments, teaching others throughout the country how to farm, and how to execute every farm work expertly and well. The Canadian farmer only requires to be convinced by practical demonstration of the advantages of introducing a change in their system of agriculture, to insure their doing so in nine cases out of ten. On Model Farms this can be properly demonstrated, and this would be one of their principal uses.

The Directors will feel much gratified if their management of the affairs of the Society is approved of by this meeting; and in retiring from this management, they would earnestly recommend the care of Canadian agriculture to their successors in office. There is much good expected to result from the action of this Society, and it would be a matter for deep regret, should public expectation be disappointed.

A. N. MORIN, *President.*

WM. EVANS, *Secretary.*

Montreal, March 24, 1849.

FACTS IN FARMING.

There is a remark we often hear, when urging farmers to take an agricultural paper, which is this, "Why, sir, there is nothing practical in them, or so little, that we will not pay our money for one." Now there is no truth in the remark; and in proof of my assertion, I ask of any candid reader if he ever knew a farmer who has attentively read an agricultural paper for two years, without improving his farming more than ten times the value of the paper? A neighbor of mine, an old man, has taken one for two years; and a few days since, he remarked to me, that he had made an improvement which was fifty dollars profit to him last year. After reading your articles on draining and irrigation, he drained a cold, wet field, and turned the water from it so as to run over a dry, adjoining meadow, thus "killing two birds with one stone," by draining the one and irrigating the other.

In 1840, I had six acres of land entirely worthless, being covered with bogs and bushes, upon which the water stood most of the year. I drained it, cut up the bogs and bushes, plowed and sowed it with buckwheat, for two years, and then seeded it down with Timothy. The result of my labors was as follows:—

160 bushels of buckwheat, valued at . . .	\$80
8 tons of hay, in two years,	80
Increased value of the land,	150

\$310

From this deduct—

For expense of draining, bogging, &c., . . .	\$100.00
For seeds, plowing, harvesting, &c., . . .	115.80

\$218.50

Net profit, \$91.50

I would ask every farmer who has such land to "go and do likewise." It would be a better investment than

to put out money on bond and mortgage; for in four years, and often the first crops will repay all expenses attending the improvement, it will be permanently valuable; besides the gratification of beholding that which was worthless and unsightly, converted into a productive and smiling field.—[Cor. Am. Agriculturist.

AGRICULTURAL PERIODICALS.

To the Editors of the Canadian Agriculturist.

GENTLEMEN,—I congratulate you, as well as your readers, upon the satisfactory appearance, and increased usefulness which the three issues of the *Canadian Agriculturist* have assumed; and I hesitate not to predict that we may, with the utmost sanguineness, expect, from the style and contents of the first three numbers, that the publication will ultimately become second to none of its kind on this side of the Atlantic. This, at least, is my conviction; and I earnestly hope that time may confirm it. I am, nevertheless, fully aware that the responsible calling and onerous task you have so laudably imposed upon yourselves cannot but for a time be surrounded with many difficulties; but, with the persevering energy and talents you possess, I have no fear for the result. And were I qualified, either by education or scientific knowledge, there is no occupation I could choose that I should more rejoice in than the one in which you are engaged; for where, let me ask, can be found one more honourable or useful to mankind, or more satisfactory to the individuals engaged in it? And I do fervently hope, that the enterprising spirit, and decided talent, with which your publication is commenced, may be duly and sincerely valued by the farming and general community of this Province, and that its circulation and remuneration may be commensurate with its worth.

I could wish to say much on this subject, but, for fear of making my letter too long, I must content myself by briefly calling upon my brother farmers, *one and all*, in every section of the Province, to aid, by every means at their command, not only the circulation of your valuable paper, but to contribute occasionally an article, based upon their individual experience and practical knowledge, acquired in this country. For it cannot be reasonably expected, let the scientific and practical knowledge of an Editor be what it may, that he can impart all the information that is desirable or necessary, unless farmers at a distance furnish the requisite materials. It is not, in my opinion, the mere fact that a farmer subscribes to an agricultural paper that should lead him to rest satisfied of having done his duty, either to the class to which he belongs, or the country of which he forms a part. A single article, perhaps, from his pen, based upon his own experience, might be the means of advancing the important art of practical husbandry, and of materially increasing the wealth of the country.

When, therefore, the untold benefits, both to the present and succeeding generations, that would flow from such a mode of procedure, are considered, allow me to call upon all who have at heart the success of agriculture (and who is there, Messrs. Editors, in this country, that is not, either directly or indirectly, interested in this great question) to give this subject their serious consideration.

None, I am sure, but will admit its paramount importance, in a country like ours; and also how deficient we are in Canada, generally speaking, in those kinds of knowledge which are necessary to our professional calling, that we may induce the soil to yield to industry and talent the full measure of her riches. What, then, but the dissemination of sound knowledge, derived from the practical experience of those around us, combined with persevering energy and study, can give us the valuable information we so much need and desire. I must candidly admit, as regards myself, although a farmer of some five and twenty years standing, that I find, the more I read and practice, the more I have got to learn; and it is this conviction that makes me anxious to see so valuable a publication as the one you have now presented us with patronised by an extensive circulation throughout the Province. And when it is taken into consideration, that one single page will sometimes contain information worth a hundred times the price paid for the work, no farmer's fireside, however humble his circumstances, or exalted his station, or extensive his knowledge, ought, in my opinion, to be without it. Indeed, what is there more interesting, or more profitable to a farmer, than furnishing himself with information, by turning over a few pages of an agricultural paper, containing the results and experience of the long and industriously spent lives of those in the same profession as himself? In every number, I may hazard an opinion, that the reader, let his experience be what it may, shall find something which he never knew before. And it is not, Messrs. Editors, your Agricultural Journal alone that I would recommend to my brother farmers, but I would say to them, compare also the science and practice most extensively given in publications of the same nature as your own, by our neighbours across the Lake, and the one also from the Lower Province. Three of those from the States I am monthly in receipt of, as well as the Lower Canada journal, all of them of the highest order, and conducted by gentlemen of talent and extensive practical knowledge. I say it is by comparing the contents of such works that the farmer secures to himself, at a trifling cost, a fund of invaluable information, which, when brought into action, not only becomes, in due time, a source of wealth to himself, but of incalculable benefit to his children.

I feel, Sirs, that I ought here to drop my pen, for I have written much more on this subject than I thought of doing at the commencement of my letter, but on the importance of the subject I feel deeply.

Yours, truly,

April, 1849.

LEICESTERENSIS.

PLASTER—ITS USES, AND MODE OF APPLICATION.

To the Editors of the Canadian Agriculturist.

GENTLEMEN,—In a former Communication, I promised that I would give you the results of my experience in the application of plaster (gypsum) upon the several crops with which I have tested its efficacy—more, however, I must confess, with a hope of

inducing those to use it who are not fully alive to the real value of its fertilising properties, than with any expectation of making converts of others, who, through ignorance and prejudice, are determined not themselves, nor will yet allow, if they can possibly help it, their neighbours, to be benefitted by it. To such, I fear it is almost useless to write or talk; and yet I have known *time and facts* convince even the most sceptical on many subjects, and eradicate the most inveterate and deep-rooted prejudices in the minds of some individuals. It is therefore, perhaps, wise to live and hope!

My first essay with plaster was about ten years ago, upon a piece of Indian corn, grown a good deal about the neighbourhood in which I then resided. It was my first year in the country, and being a perfect stranger to the crop, I sought, as a matter of course, instruction of my neighbours, as to the best mode of cultivation; and, on expressing my doubt as to the land being in sufficiently good heart to carry such a bulky crop through to maturity (having little, or no manure then on the farm), I was told there was no fear of that, with the manure I had, provided I gave the corn a liberal dressing of plaster. I immediately set about procuring the *precious article*,—for such I have considered it ever since, its virtues being sufficiently tested upon that crop, to my entire satisfaction, as well as upon those of the two subsequent years' growth on the same spot, without any additional plaster or other manure; and I will here give the particulars. The corn piece was about five acres; and on learning that cattle, horses, and sheep were extremely partial to it as fodder, I determined on trying what extra quantity I could procure, to cut for that purpose, by leaving the plants twice as thick in the row (for I had sown the part on which the corn was to ripen in drills, about three feet apart, and the one acre for fodder about half that distance), and dressing them liberally a second time with plaster. The result, I need hardly say, more than answered my most sanguine expectations; for I cut between four and five tons, as near as I could guess, by the number of loads we hauled out of the field; and I do not hesitate to assert, that had the land been properly prepared the fall previously, we should have cut fully six tons to the acre; for I have since seen upwards of that weight grown on a favourable location, where the crop has been well managed, and the season a *kind one*; for you well know, Gentlemen, notwithstanding all the experience, skill, and energy we farmers may possess, the *seasons* will occasionally (if I may be permitted to speak plain) make fools of us all! I have two or three times since grown the same crop broad-cast, but not with exactly the same successful result: but I do not attribute it to any fault in the system; it was owing to the soil being greatly impoverished, in one instance; and in another the crop was sown too late; and the third time it had to contend with the hottest summer Canada has experienced, according to the recollection of that veritable personage, "the oldest individual then alive!" It is fully my intention this year, notwithstanding, to sow four or five acres for fodder, if I can accomplish it; being short of grass land, and heavily stocked: but I shall prefer putting it in

with the ribbing plough, as before, or with a drill, the rows eighteen inches apart, and the plants thinned out about nine inches asunder in the row. I may as well here state, that I prefer this system to the broad-cast, as I have not only the plants more uniformly distributed, but I think a heavier crop, besides the advantage it affords of running the ribbing-plough, or cultivator, once between the rows, when the plant is about nine inches high, to keep down the weeds; and those that rise between and close to the plants are destroyed with the hoe, in thinning out the latter. This leaves the soil as clean, and in as good order for wheat, as the best fallow you can make.

And now for the result of the double application of plaster that was given to the acre, from which the fodder was cut, upon the two subsequent crops; for this is what I wish more especially to call the attention of your readers to, and particularly of those (should this letter, by chance, meet the eyes of such) who unscrupulously assert, without having given it a trial, and thereby prejudice their neighbours, that plaster is an *exhauster* of the soil, and therefore does more injury than good. The first crop that succeeded the corn was oats, the second peas. They were both good throughout; but upon the acre that was doubly plastered, the crop was rank in the extreme—a much darker green; and and the oats, when ripe, much heavier, and more of them; and the straw nearly a foot and a half higher than the remaining part of the five acres. And, as regards the pea crop, the following year, the effect, where the double dressing of plaster had been applied, was, if possible, more plainly discernible. The pea straw was nearly as long again as the other part of the crop—also darker in colour, stronger, the leaf larger, and the pods much more numerous. In fact, I believe the crop would have gone on growing and flowering till Christmas, had the weather permitted; for when we cut it, which was very late (the middle of September), that part of the crop was still in blow, and the other part harvested.

Now, Messrs. Editors, what will the *unbelievers* in the fertilizing property of plaster say to this statement? Did the plaster, in this case, prove an *exhauster of the soil*, or an injury to it? Was ever such miserable fallacy heard of—such stupid ignorance promulgated? Is it not equally surprising and deplorable that men will allow themselves to be robbed, as it were, of hundreds of dollars yearly, because they will not give this cheap and extraordinary fertilising manure a fair trial; when it can be procured, too, at so small a cost? To those who use the article I need not even say, persevere—their own sagacity will lead them to that; but to those who argue themselves and their neighbours out of the benefit arising from it, and thereby lessen the yearly produce of their farms nearly, if not fully one-third (for I do not hesitate to affirm, that there is scarcely a crop grown, upon which it may not be applied with success, provided it be *judiciously used*), I would urge most strenuously to give it once a *fair trial*; and I dare hazard they will be ready, *ever after*, to travel almost to the Land's-end for it, rather than to be without it. Let me, Messrs. Editors, ask the simple question of those who erroneously assert, through sheer ignorance, that "*plaster is of no benefit to the farmer*," if

they suppose our intelligent and shrewd neighbours, across the lines, would be such arrant fools as to send hundreds of miles, to the Grand River, for ship-loads of plaster yearly, and afterwards transport it all over the Union, if there was not something good in it? Why, Sirs, the American, as well as the native Canadian Farmer, would about as soon think of expecting a crop of wheat without sowing the seed, as to harvest his clover or corn without a liberal dressing of plaster, let the cost be what it might.

But do not let it be conceived, for a moment, that I would wish your readers to understand that plaster will do everything for them: it is in conjunction with other manures, and good husbandry, that its efficacy is most conspicuous and valuable. And in certain cases, where a sufficiency of barn-yard, or vegetable manures, cannot be procured, it will be found a cheap and sure auxiliary. I have used it most successfully on my oat, wheat, and pea crops, as well as upon grass land and corn, especially on the three first, *where the soil has been somewhat impoverished by constant grain cropping, without aid from any kind of manure*; but I would not advise its application on *wheat, where the soil is at all rich, unless you could ensure a hot, dry summer*. It is apt to force the straw too much; and if a dripping season follows, mildew and rust are the inevitable consequence. I once applied a bushel and a half to the acre, upon a seventeen-acre piece of land I had just taken, for spring wheat. The soil was naturally a good sandy loam, but had been, I thought, over cropped. It was sown broad-cast, and harrowed in with the wheat, clover, and timothy, and the intention was to have given half-a-bushel more per acre, when the wheat was up about three or four inches. This, however, from some cause or other, was not done. It was, nevertheless, obviously plain to my mind that there were fully five bushels of wheat more to the acre where the plaster was applied, as there was part of a land left unplastered, to give the experiment a fair trial; which was made in consequence of the crop being sown three weeks later than it ought, through a delay, the clover-seed not reaching me at the proper time, and of a suspicion entertained by myself of the land being deficient in condition. I speculated upon gaining time, by the plaster forcing both the wheat and clover, immediately they began to germinate; and in truth I was not disappointed. Besides which, I believe that I secured that year my crop of clover and timothy by the operation: at any rate, it was very considerably increased thereby, for it was the trying, hot summer, before alluded to, when eighteen out of twenty farmers lost their clover and timothy crop. But, as the summer turned out, and had I applied another bushel of plaster per acre, I firmly believe that I should have had another five bushels of wheat per acre, in addition to the other five obtained by the first plastering; and my clover and timothy crop (which was very good the following year) increased proportionably.

I have also tried plaster with good effect on both turnips and potatoes. I have seen it, too, applied with considerable advantage on rye and buckwheat, where the soil lacked condition; but on clover and timothy, or general mowing land, I will guarantee

for every bushel and a half of plaster per acre an extra ton of hay, provided the plant is thick on the ground, and the plaster sown *immediately* vegetation begins to start. For here, I hold, is the secret of plastering with the most advantageous effect; for it is sure to get well washed down to the roots, by the spring showers, by which the roots become quickly stimulated, and a covering of the ground, by the plant, is rapidly obtained, that keeps out the extreme heat of the sun, with which we are often visited, in this climate, in May and the beginning of June. I have been much surprised to hear many farmers talk of not plastering their clover and other crops till half-a-foot or a foot high. Now, from my own experience, and several years' close observation of my neighbours' doings, I feel myself warranted in pronouncing it *a most erroneous system*. And I dare assert, that any one plastering his wheat crop when a foot high, shall have more straw and rust than he bargained for; and in his clover crop, *half a ton, instead of a ton, extra per acre*.

Let the simple question be asked, for what purpose is the plaster applied? To stimulate the growth of the plant, most certainly! Is it, then, possible that that stimulant can be applied too soon after the frost is well out of the ground? I think not. And with this observation I will draw this much longer letter than I had intended it should be to a close; begging, however, of you to curtail it to any extent you may think proper; and with a renewal of my good wishes for the prosperity of your valuable paper.

I am, Messrs. Editors,

Your obedient Servant,

Guelph, 8th March, 1849.

LEICESTERENSIS.

THE CULTIVATION OF THE CLOVER PLANT.

MESSRS. EDITORS.—The importance of the clover crop is by no means sufficiently estimated in this country. And as this is about the season when many farmers supply themselves with clover-seed, as well as with that of timothy, for the purpose of seeding down with their wheat and other grain, my object is, to point out to such as have practised the plan of *thin sowing the immense loss they incur, in a series of years, by so mistaken a practice*; and at the same time to represent to them the actual and enormous gain, in a variety of ways, they will realise, by a liberal sowing of clover-seed.

I regret much that I am not able to show at once, for want of correct statistical data, the immense loss the Province annually suffers from the single and erroneous operation of a parsimonious sowing of clover-seed, but at some future day I will endeavour to procure, as near as possible, the number of acres that are seeded down every year to clover; and I am certain the result of this wretchedly imperfect branch of agriculture will actually astound any one whose eyes it may chance to meet.

I am well aware, Sirs, that the quantity of clover-seed *generally* sown by farmers in this country varies from two to five pounds per acre. In England I never sowed less than 18, and here not less than 14 lbs., with from 3 to 5 lbs. of timothy, to the acre. Some people may think this too much, but I will prove that it is not so; for, in the first place, I am convinced that the farmer here, by *thin* sowing, has *one-third*, at least, of his clover-plant thrown out and killed, at the breaking up of the winter, by alternate thawing and freezing, which the plant is subject to in this climate; for I have witnessed with my own eyes this effect, wherever a paucity of seed has been the farmer's practice; but never have I found it so, except where draining was very badly needed, in the course of my observations, where the plant, at the commencement of the winter, was as thick upon the ground as it ought to be. Besides, where can the man be found who has not observed, in walking over his clover-fields, when we have to contend with one of our dry, scorching summers, or, indeed, during the ordinary hot months of every summer, that nearly a third of the remaining plants which the frost has spared are literally dried up by the heat of the sun. Why, Sirs, it was but the latter end of last summer that I had the pleasure of spending a day with one of our most respected and zealous farmers—an extensive Durham and South Down breeder, who was lamenting the condition of his flock and herd, through the failure of their pasturage, in consequence of the dry summer; but when I pointed out to him the thinness of the clover plant (second year's growth), and I found, on inquiry, the small quantity of seed, 5 lbs. to the acre, he had sown, and upon making him acquainted with the quantity that I, with many others, usually sow, it was no longer a mystery to him that there was a thin plant, or that the sun and frost, together with his cattle, had made the pasture so bare. And on reflecting upon what I had said, he at once saw the advantage derivable from thick sowing, and allowed that it would be best to practice it in future. But it is not only the bare loss of pasturage and hay that accrues from this miserable system of thin sowing of clover and other grass seeds. Look, for instance, at the incalculable loss in beef, mutton, tallow, butter, cheese, and wool that the farmer individually, and the country collectively sustains, from the mistaken economy of this single operation of husbandry. If a farmer gets but half a *wheat* crop, he is not long considering the extent of his loss without setting about repairing that loss as quickly as he can. And if, then, he gets but half a crop of hay, or half the quantity of

fat mutton, beef, wool, cheese, and butter, for market, from a cause that is almost immediately under his own control, is he not bound to make the exertion; nay, is it not equally his interest in the one case as in the other, to redeem the error as speedily as possible that creates the loss?

There is another evil I would also wish to point out, arising from the sowing of grass seeds, and which every one will, I think, allow to be of equal magnitude with those already named—it is the filth and weeds of one kind or another which takes possession of the soil, that not only chokes, but deteriorates your grain crops to a very considerable extent, and also creates an enormous expense in securing a good, clean tilth for the root and grain crop that has to follow. There is nothing, in my opinion, that will keep a farm so free from weeds, and in good heart, *at so small a cost*, as a thick plant of clover! I speak advisedly on this point, from many years' experience and conviction.

Besides all the advantages and disadvantages derivable from thick or thin sowing of clover, as pointed out above, I have yet the most important one to speak upon. It is the rich and highly-prepared state in which the soil is left, by the great mass of fertilising matter deposited by the clover-root, on which the wheat plant delights to luxuriate, previously to and during the filling of the ear; and the consequent increase will be from seven to ten bushels per acre! Let any farmer give the practice a *fair* trial, and I dare hazard my right hand he will find it as I have stated. Again, from experience, I can affirm, that upon my clover ley I have grown both heavier, finer, and a larger quantity of wheat per acre than I could ever produce in any other way. This is where I sowed not less than 18 lbs. of clover-seed to the acre, with no other grass seeds. But here I would recommend not less than 12 to 15 lbs., with 3 or 4 lbs. of timothy. But if required for market hay, of course considerably less clover, and more timothy-seed must be used. Are not, therefore, Messrs. Editors, the facts I have here stated worthy of a consideration with the farming community of this country? Let me ask, if a ton to a ton and a half of hay to the acre *extra*; one third more, if not double the amount of stock kept, and wool clipped, upon the farm, with at least from 5 to 10 bushels more wheat, as well as other grain in proportion, grown per acre, and a clean, creditable farm, in good condition, *will not almost double the farmer's gains*? Surely it is a system that will recommend itself, when it can be effected at so trifling an outlay, compared with the advantages in every way gained. I am well

aware that there are many who may think this a waste of seed, and an unnecessary outlay, and will say that they can produce a sufficiently thick plant without it; and I am quite willing to allow they may, *provided* they can ensure the growth of every seed sown. But when it is taken into consideration that one-fourth, at least, if not one-third of the seed *bought* will never germinate, either from old age or imperfect ripening, and another fourth, at least, may be reckoned upon not getting even a chance to grow, from various causes, such as being smothered by stones, lumps of earth, and rubbish of one kind or another; harrowed in too deep, or not harrowed or rolled in at all, as is the fashion with some people; and a part scorched up or frozen out immediately the seed begins to germinate; besides no small proportion being consumed by birds and all kinds of insects, I think I am not stating *too much* when I assert that *one-half*, at least, of the seed sown cannot be considered to come to maturity! Others, again, may say, as indeed I know they do, that they cannot afford, or have not the means to purchase a sufficiency of seed, at that rate. Pray let me ask those who talk thus, that if they deem it sufficiently important to furnish themselves with a proper quantity of seed for their wheat, and all other grain and root crops, why, in the name of all that is good, should they not equally and determinedly make the effort to procure seed for that *plant*, which, in my humble opinion, is equally, with the root crop, the foundation of all good and profitable farming; and more, *far more* sure of remuneration than any other crop grown, provided it is put in in a creditable and husbandman-like manner. But, after all, let us see what this extra outlay of a few pounds more seed will come to. Suppose, for instance, 5 lbs. of clover-seed, at a cost of 10 cents per lb., or six dollars a bushel, which is about the price at the present time, has been sown to the acre, and the farmer wishes even to double that quantity, the additional cost will be the trifling sum of 50 cents; or even suppose the seed to be 12 dollars per bushel, ought the small additional outlay of five shillings currency per acre to be a consideration for a moment, or an impediment with the farmer, to his sowing that quantity, when the immense advantages I have pointed out are to be gained by so doing. How, let me ask, can any man manure and keep his land clean so effectually at so trifling a cost? I well know there are those who have practised this system in this country, from my recommendation, years ago; and whenever I visit, or pass their farms, I invariably see a *very heavy crop of clover*, and nearly *double the quantity of stock* there used to be on the farm; and all other crops heavy in proportion.

I hope, Messrs. Editors, that this truthful statement may be the means of inducing some of my brother farmers to ponder on the subject. And I feel assured, that if they will once begin to reflect, they will not be long before they act! And I hope the consideration of my having written but of facts that have occurred under my own supervision, and of my writing neither for fame nor for profit—my signature being a feigned one—may have its due weight with those who may chance to read this letter. In conclusion, believe me, that the only inducement I have in taking up my pen, is to be of service, if I can, to those in the same profession as myself in this, the country of my adoption. And should you deem this letter worthy a place in your valuable paper, or think my future efforts can be of service to any of your readers, I may be induced to give you my experience in other matters relative to Agriculture. But I promise you that my next letter shall be a much shorter one. With my ardent wishes for the continued success and usefulness of your publication,

I am, Gentlemen, your obedient Servant,

LEICESTERENSIS.

Guelph, 25th February, 1849.

P.S. Enclosed, you will find the subscription and names of 13 new subscribers; and I shall have great pleasure in renewing my exertions to add thereto, as soon as my health and the roads will permit me to get more amongst my neighbours.

I was much pleased at reading, in your first number, a very instructive article from the able pen of that zealous and successful agriculturist, Henry Moyle, Esq., of the Sheep Walk, near Brantford, on the advantages of sheep-farming in connexion with the growing of wheat; and of the great benefits realised by the use of plaster. The subject is, indeed, fraught with invaluable information, which the Canadian farmer will do well to reflect on, and profit by. The immense advantages attending, in a variety of ways, the liberal use of plaster, cannot be too strenuously urged upon the farmers of this country. And I will endeavour, if agreeable to you, to give you a few results of my own experience of its utility in your next number. In the meantime, I would say, let every farmer supply himself with it, almost at any cost or inconvenience, provided it is within his reach. L.

[The two preceding Communications would have appeared in our last, had our matter not been made up before their arrival. We beg our respected Correspondent to accept our warmest thanks for his good wishes and exertions. We shall always be happy to receive Communications from his pen.]

THE CULTIVATION OF THE SOIL.

The cultivation of the soil is the most noble employment of human hands and thought. It is the most ancient, the most natural, the most beneficial, the most universal, the most healthy, and the most enduring employment, and, while accompanied with a thousand holy associations, leads the mind "through nature up to nature's God." If the "undevout astronomer is mad," how much more so is the undevout cultivator of the soil! God speaks to man in the bursting vegetation, in the whispering foliage, the ripening fruit, and in the "sere and yellow leaf. His voice is in the wind, that brings nature's plaintive music to the ear, in the rushing waterfall, and in the vivid lightning that rends the mountain top.

"Read nature; nature is a friend to truth;

Nature is Christian, preaches to mankind,

And bids dead matter aid us in our creed."

Men, at the present day, are beginning to have a more just conception of the cultivation of the soil. Agriculture is become elevated. Science, the handmaid of every vocation, has lent her aid to this department of usefulness, and the farmer has risen from a mere laborer to the practical philosopher. To be a proficient in his art, he must study the laws of vegetation,—a field of boundless investigation,—and so apply his knowledge in assisting nature, as to produce the greatest possible results from the soil which he cultivates. There is abundant exercise for his hands, his head, and his heart; and the great variety of living objects under his care must render his labor the most satisfactory. In a word, agriculture tends to harmoniously develop the whole man.

While the gayety and bustle of a city life may be more congenial and tempting to the young men, as they become tempered by age and wisdom, almost instinctively turn their thoughts to some pleasant rural retreat, which may furnish them an honest competence, and afford shelter from the shocks of a precarious business. Industry is the price of happiness; and the spirits broken will revive by labor, and gain their wonted elasticity and strength. As the chaste Cowper exclaims of labor,—

"Tis the primal curse,

But softened into mercy; made the pledge

Of cheerful days and nights without a groan."

To many, a country residence is irksome and insipid; but such persons little know where true happiness is to be found. They are poorly schooled in self-reliance, who pin their happiness to gay and senseless companions, and can find no pleasure in the cultivation of a little plot of ground, in communion with nature, with books, and a few choice friends. They are the greatest and purest minds who love Nature for her beauties. What is a dreary waste to others, to them is a paradise. Such men as Numa, Cato, Cincinnatus, Bacon, Cowper, and Washington, have blessed Providence that they saw the beauty of his handiwork, and were enabled to read

"The LIVING PAGE, whose every character

Delights and gives us wisdom."

[*New England Farmer.*

D. W. L.

Dr. FRANKLIN, in speaking of education, says, "If a man empties his purse into his head, no one can take it from him."

THE GADFLY IN CATTLE—INQUIRY.

I have a cow which I value highly, and she is troubled with grubs in her back, which I suppose are caused by the gadfly depositing its eggs, in the summer, in the animal's back; and they are now undergoing a change preparatory to their exit and transformation into a fly, to torment anew the cattle. In the present state, they seem to create great uneasiness, the animal constantly licking herself; and although well-fed and sheltered, she falls away in flesh, which I have no doubt is caused wholly by the irritation of these insects.

Now, what I want to know is, what is the remedy? Can any thing be employed which will destroy these grubs, and do no injury to the cow?

Feb. 18.

G. R. P.

REMARKS.—These grubs are undoubtedly the larvæ of the gadfly, (*æstrus bovis*.) This fly, which somewhat resembles a small bumblebee, deposits its eggs in the skin of the backs of cattle during the latter part of the summer; and these worms or grubs, live during winter in or under the skin, causing bunches or lumps easily felt by the hand outside, and, when at all numerous, injuring the health and growth of the animal. Each of these bunches will be found to have a small opening, to admit air for the insect, or to allow matter to escape. We know of no way to destroy these vermin but to extract them by hand, squeezing them with the thumb and finger, and aiding their exit with the point of a knife. When the orifice is well open, a drop of turpentine will do the work more easily. In no case should they be allowed to remain long after their presence is discovered.—[Editor of Ohio Cultivator.

HINTS TO DAIRYMEN.

FOUR years ago the number of cows milked in the State of New York was within a small fraction of a million. It now considerably exceeds even that high figure; for the dairy business has been greatly extended since the census of 1845. No branch of rural industry presents greater facilities for improving a farm, for increasing its capacity to keep more cows and enlarge the annual receipts of the busbandman. By carefully saving all the manure, both solid and liquid, made by domestic animals, it will be easy to raise an immense amount of excellent food for cows, on a comparatively small surface. For this purpose, corn, carrots, potatoes, pumpkins, clover and herd's grass are among the most available crops which we have seen cultivated.

The dairyman, by uniting skilful tillage with grazing, will experience little difficulty in feeding a much larger number of cows than is now generally kept in New York and Ohio. Of course, he will need more funds to purchase more cows, and more help to milk and take care of them. Many, however, who do not lack the wherewith to procure either labor or cows, fail to see their way clear, how to raise six or eight tons of sweet nutritious forage an acre, by planting corn quite thick in drills for that purpose. Like all other farming operations, this must be practiced repeatedly to be well understood. We have seen some failures, but more cases of the most satisfactory results. There is some trouble,

particularly in wet weather, in curing a luxuriant growth of green maize. Being cut when most succulent, just as the kernels begin to form when the whole plant abounds in saccharine matter, it needs to be exposed to the sun, turned over, like thick new mown grass, and thereafter to be bound in small bundles and set up to make in small bunches or stooks. The Rochester City Milk Company, and other milk-producing establishments with which we have been acquainted, have found the raising this kind of forage as well as carrots, profitable. At the South green rye, oats and peas are fed to mules, horses and cows. On good land, the expense of growing additional feed for dairy cows, i. e. something beside common pastures and meadows, is much less than one who has never tried it would suppose.

A top-dressing of lime and gypsum spread over pastures and meadows in the spring of the year will often impart new vigor to the grass, and add greatly to its yield for the season, if not longer. Sometimes more grass seed should be sown, and the ground well scarified with the harrow. Ashes are particularly valuable to scatter over all fields where a good crop of grass is desired. Swamp muck sweetened with caustic lime in the form of compost, is generally worth more than it will cost, to be used as a top-dressing on meadows and pastures. Applied to hoed crops it is also valuable.

As first rate dairy cows are always in demand at fair prices, every farmer should be careful to raise all calves, particularly females, from a family remarkable for good milkers. In this way the dairies of the country will improve rapidly. Much depends on the keep of calves and heifers, and the way in which the latter are treated during the two first years they are milked, in fixing their productive value for dairy purposes. Perfect regularity in feeding, uniform kindness and gentleness, as well as milking reasonably fast and quite clean, are matters of practical importance. A young cow which is much inclined to elaborate a large flow of milk will secrete more, if it be drawn three times in twenty-four hours, and at eight hours between each milking than she would if milked but twice a day. Salt cows regularly, or have it under a shed where they may eat what they will, after having been restricted a little, till accustomed to a full supply by degrees. Have your pastures as near the milk house as practicable that your herd be not taxed with a long walk to and from their fields to the yard or cow house.—[Gen. Farmer.

EXPERIMENT IN WIRE FENCE MAKING.

BY D. KINGMAN.

MESSRS. EDITORS,—Believing that my brother farmers feel an interest in whatever experiments others may try, whether useful or otherwise in themselves considered,—especially if facts are stated, so that they can practice, throw away, or improve upon them, as their judgments may direct—I have been induced to send you my experience in making a wire fence.

During the last fall I constructed 104 rods of wire fence in the following manner: I placed red cedar posts one rod apart, the posts being sawed about 3½ inches square at the bottom, and 3½ by 2 inches at

the top, and set firmly in the ground to the depth of 2½ feet. I then bored holes through the posts with a ¼ inch bit—the upper one 4½ feet from the ground, and then 9, 8½, 7½ and 6 inches below, using five wires. Five inches below the lower wire I placed a board fourteen inches wide, (with a short post in the centre to which I nailed the board,) which comes near enough to the ground. I then drew the wires through the posts and strained them by means of a lever, one end of which I stuck into the ground. I then looped the end of the wire around the lever near the ground, and while one is drawing upon the top of the lever, I plug the hole tight with pins of red cedar, previously prepared. I usually strained the wires 15 or 20 rods at a time, then spliced the wires by looping and twisting the ends, and proceeded in like manner again. After the wires are in and the boards on, I take pieces of wire of the right length and make one end fast to the upper wire, and then wind it round the wires below till I come to the board through which I bore a hole and fasten the lower end of the wire; three of these wires between each two posts, thus fastening it all together.

The upper and lower wires are No. 10, and the others No. 11. I bought my wire of MESSRS. PRATT and Co., of Buffalo, at \$7.50 per hundred. The five wires weighed 355 pounds. The wire that I used to weave in up and down was No. 16, and cost 10 cents per pound; it took 25 pounds. My posts I bought in the log (pretty large ones,) at \$12 per cord; one cord made 105 posts, the number used. It took 2000 feet of hemlock boards, which I reckon at \$7 a thousand. The saving of the posts was \$2.25. The cost foots up as follows:

355 pounds of wire, at 7½ cents, . . .	\$25.02
25 pounds of wire, at 10 cents, . . .	2.50
One cord red cedar posts,	12.00
Sawing posts,	2.25

Making the cost of materials, \$55.77

Which being divided by 104, the number of rods of fence made, gives 53½ cents as the cost per rod—aside from nails of which I kept no account.

Some of your numerous readers may be anxious to know whether such fence will answer the purpose in all cases. I can only say that mine is a road fence, and that when it was built, there was a good crop of pumpkins lying in the field along side, where they grew, and that notwithstanding many cattle and hogs made the attempt at them, they did not succeed: and my short experience goes far to convince me that no cattle, hogs or fowls will go over or through it.

Ridgeway, N. Y., January, 1849.—[Gen. Farmer.

THE NEXT FAIR of the N. Y. State Ag. Society, as we have heretofore stated, is to be held in Syracuse, on the 11th, 12th and 13th of September next. The amount of premiums offered is about six thousand dollars. Now is the time for the farmers of Western and Central New York to commence their preparations to add to the interest of the show, and win their prizes. We shall endeavour to publish the premium list, or a synopsis of it, in our next. It can be obtained in pamphlet form, we presume, by addressing the Secretary, B. P. JOHNSON, Esq., of Albany.—[Genesee Farmer.

PLASTER, OR GYPSUM.

Many cultivators have expressed great surprise that gypsum, or Plaster of Paris, should operate favourably as a manure on a piece of land for a number of years, and then cease to have any effect. But we do not regard this as at all surprising, for in the first place we must consider that the soil is deficient in the elements of which plaster is composed, else it would not operate as a fertilizer, or a stimulant; and by applying it for several years this deficiency is supplied, and further applications cease to produce any beneficial effect.

As plaster is composed of sulphate of lime, or a combination of sulphur and lime, these ingredients may be taken up into the plants, as they constitute a part of most plants, though a small part; and this may account for a small quantity of plaster producing so powerful effects in the production of crops. For although the amount of lime and sulphur is generally very small in plants, yet that small amount is absolutely necessary in their composition.

When the soil has become saturated, or sufficiently supplied with plaster, and no further applications are made for several years, the plaster may become used up, in some measure, either by cultivated crops, or the spontaneous production of weeds, grasses, bushes, &c.; and then a new application may again prove to be beneficial. Or plaster may have a valuable effect on the soil, in preparing it to supply food for the plants, and after a few years this favourable effect may cease until a further chemical change takes place in the soil, which may, after a while, become a slow process, so that years will pass away before plaster will again act as a manure.

We have in nature a great many analogous cases. Sand may be added to a clayey soil until there is sand enough, and it ceases to be useful; but after a long course of cropping with corn, herdsgrass, red-top, and small grains, a large amount of silex or sand is taken up in solution, and a new addition of sand would be beneficial. An animal may be in great want of salt, or some other condiment, and it may be given until it is no longer useful. After a while, the condition of the animal may require another supply.

These remarks may explain some of the facts offered in the following interesting article from the Dollar Newspaper:—

GYPSUM AND CLOVER.

For the last seventeen years, my attention has, to some extent, been directed to the peculiarity of the different soils of this and the adjoining counties of Maryland. Much attention has been bestowed on the various modes of improving the soil, more particularly by the use of clover and plaster of Paris. This having been the favourite system for the last twenty years, and indeed long before that time, no other course was considered at all reasonable. I well recollect seeing in nearly every part of our country the most luxuriant fields of clover, rising at least two feet or more from the surface of the land, therefore furnishing the soil with a most splendid covering, sufficient, when ploughed under, to enrich the soil, to make it produce the finest growth of cotton, corn, wheat, or tobacco. Since the time first alluded to, there has been a very general complaint that our lands were not half so valuable as they were

first supposed to be, in consequence of our fields not possessing the capacity of yielding their former crops of clover. One man asks another why this should be so. What has done all this mischief? And, strange to say, no two individuals can agree. Well, now, as we have neither the Ural Mountains of Russia nor the mountains of New Mexico or California to resort to, to enrich our soils, let us be content to use such means as may be within our power to effect this most desirable object.

It is a fact not to be questioned, that land which once produced fine crops of clover, when accompanied with gypsum or plaster, will now scarcely produce any; at least, will not when clover and plaster have been regularly used for seven or eight years. Now, my principal object is to learn, why is all this? Is the land tired of cultivation? Or is it that the gypsum is adulterated, and its properties useless to the application of clover? I think not. I believe too much has been infused into the earth. I cannot suppose the clover can in any way be detrimental to the soil. It must be the bad effects of the plaster; for who doubts for a moment that its effects are various, and there are principles which have been discovered, by which its influence has been traced? Some salutary correction is needed; but what that remedy is, I am at a loss to conjecture. He alone who is familiar with chemistry, and can analyze the soil, can point out the constituents necessary to correct the evil. There is, to my mind, a most mysterious agency in plaster as well as lime, and he who can explain it is a benefactor. Can its advantages or disadvantages be owing to the chemical character of the soil, or the kind and quality thereon produced? We not unfrequently complain that the land is worthless, it is exhausted; and verily we cannot explain what we mean. For myself, I plead ignorance. I will state, however, a few circumstances which have come under my personal observation. I discontinued the use of gypsum on my clover land for nearly five years, believing, when I again commenced its use, that the best results would accompany the experiment; and so they turned out. My most sanguine expectations have been more than realized.

I sowed, this season, (1848,) forty bushels of clover seed, and the most competent judges have affirmed that it has never fallen to their lot to witness a more luxuriant crop of young clover, the greater part of which was bedded, which is very unusual. The entire field was well plastered, and when a row happened to escape the action of the plaster, the clover was small and puny. Now, I will venture a prediction, should plaster be regularly applied, say for the next five years, that this very land will not produce clover sufficient to make even good grazing. It must now be admitted that I have opened a wide and extended field of inquiry, on a subject which is entitled to at least some consideration from an intelligent agricultural community, without attempting to explain the properties of the mineral mostly used, or without any attempt at analysis of the different soils we have to cultivate, for the best reason—my experience in a theoretical point of view does not justify it. What I have obtained has been from long experience, certainly not from theory. What we require is science, fully developed through chemistry; and not till then can the occupation of the farmer

rise to that elevated position so necessary for him to occupy, and which it should be his object to acquire.

INFORMATION FOR FARMERS ABOUT PLANK ROADS.

Scientific experiments have proved that the same power required to move one ton, in a common lumber waggon on a level earth road, will move the same waggon with a load of 4 and 1-3 tons, on a level wood surface.

One ton is the average practical load for a two horse team over a tolerably level common road, it follows then that the same team can with equal ease draw a load of 4 and 1-3 tons, on a properly graded plank road. Practical results have proved this to be true, because 4 tons now constitute the usual load for a two horse team on all plank roads, where the inequalities of the land's surface have been levelled to practical grades. Waggon however, to bear such increased weight, should be made some stronger than they are commonly made for ordinary use—but yet a common waggon will bear a much greater weight on a plank than on a common road, for the reason that the pressure is direct and uniform on a plank road, whereas on a common road, by reason of ruts and inequalities of surface, the waggon is subjected to severe trials by oblique and lateral strains. Both waggon and harness in constant use on a plank road by means of this steady action and diminished friction, will last longer than on ordinary public roads.

Suppose a farmer living some ten miles out of Detroit has 140 bushels of wheat to take to market, in his waggon, over common roads in the condition in which they generally are. He would not ordinarily carry more than 35 bushels at a load—the weight of which at 60 lbs the bushel is 2,100 lbs; one would occupy so much time that he could only make one trip a day, and then he would have to make four trips and consume four days in conveying his 140 bushels to market—but if he could travel on a plank road he could carry the whole 140 bushels at one load; the weight of the whole at 60 lbs. the bushel is 4 tons and 400 lbs. How then does the account stand? Four trips over a common road will cost as follows: 4 days for himself and team at \$1.50 a day, \$6 00

One trip over a plank road, in one day is \$1.50.

Toll both ways at 2 cents per mile is \$1.90.

Difference in favour of plank road is \$4 10.

The first impression is very strong against being taxed for travelling to market and great hostility is naturally felt against the conversion of a free into a toll road, but this arises from not understanding the advantages of a Plank Road.

The above calculation shows that the payment of the 40 cents for toll is not in fact a tax out of pocket but the cost of a privilege by which \$4 10 are saved. Money saved, is money made—and in the case above stated, the farmer takes 40 cents out of his pocket and puts \$4 50 in the place of it.

In the above calculation no notice is taken of the cost of strengthening the waggon because such cost is more than made up by the saving in blacksmiths and other mechanics' bills for repairing damages which continually accrue on common roads and in

the greater duration of waggon and harness.—[Commercial Bulletin.

DRAINING low lands will contribute to promote health and profit. Generally speaking, our wet and marshy lands are the richest in organic matters, and become the most profitable to the owner, when thoroughly drained.—[Buel.

FACTS FOR AGRICULTURISTS.—The exports of breadstuffs from the United States, Sept. 1 to Jan. 1, 1849, as compared with the same period ending Jan. 1, 1848, are as follows:

	Flour, bbls.	Meal, bbls.	Wheat, bu.	Corn, bu.
1848,	95,767	52,715	18,004	606,301
1849,	638,994	45,193	854,005	5,078,712
Increase,	543,227		836,001	4,472,411

COUGH IN HORSES.—In all disorders accompanied by a cough, the true cause should be ascertained. Sometimes the cough is only a consequence of a chronic or seated disease, as is the case in heaves, &c. At other times it is symptomatic of recent inflammation of the mucuous membranes of the head and glands about the throat. We have found salt, given freely, together with an occasional dose of saltpetre, to be an excellent remedy in cases where a horse has had the horse-ail. and the cough holds on after the original disease seems to have gone. For a dry, husky cough, not attended with the heaves, green or laxative food, such as roots, or masches of scalded bran, in which is put the pulverized root of elecampane and lavage, has been found beneficial. If there should be found indications of heaves, put a spoonful of ginger, once per day, in his provender, and allow him to drink freely of lime water. Horses that are kept on musty hay will very soon begin to cough. The best remedy for musty hay cough is, to change the diet to good, sweet clover.—[Maine Farmer.

CLIPPING HORSES.—Observing a paragraph relative to clipping horses, I beg to state that I have lately been informed that the process injures the constitution of the horse in the long run, causing the animal to wear out sooner, notwithstanding every care may have been taken with him at the time of the operation and subsequently; although it is conceded that at the time of clipping, the horse is thereby enabled to perform his work more easily, and also thrives better.—[Agricultural Gazette.

CHOKED CATTLE.—*Remedy.*—Take any kind of tube, say an elder or quill, and fill it with gun-powder. Open the mouth, hold out the tongue, put the tube as far down as convenient, and blow the powder from the tube into the throat. It will relax the pipe and suffer the obstruction to pass on. Try it. D.S. BUFFINGTON. Hinmanville, March, 1849.

PLOWING BY STEAM.—A steam plow has been tried on a farm near Stratford, in England, by stationary engines at the extremities of the field, and the experiment is said to have been satisfactory. The engine is ten feet by six in bulk, portable with a pair of horses, and may be used for plowing, threshing, or for any purpose where power of the kind is required.

Horticulture.

HORTICULTURAL SOCIETY.

We congratulate our readers on the formation of an *Horticultural Society* in this City. When the rapid progress of Upper Canada in population and wealth is considered, the desirableness of such an Institution, centrally situated, will at once become apparent. Horticulture is the precursor and natural ally of Agriculture. Both are dependent upon the soil, and are, in common, governed by the same great principles or natural laws. Hence, we feel anxious that our publication should, as far as practicable, embrace both. While Agriculture furnishes the more common and necessary food for man, and is in almost all countries the principal source of wealth, Horticulture presents an endless variety of other productions, in vegetables, fruits, and flowers, which, while many of them minister largely to his physical comforts and wants, others more directly tend to refresh the spirit, and reform and elevate the taste. We confidently anticipate a large share of public patronage to this Society, as soon as its merits become known, and shall always be happy to register its successful proceedings. The price of members' tickets has been judiciously placed low, with a view to extend the gratifications and benefits of the three annual Exhibitions, which are intended to be held as widely as possible. Gentlemen's tickets, 5s.; Ladies' do. 2s. 6d. The following are the office-bearers for the ensuing year:

Patron—The Chief Justice.

President—Mr. Justice Draper.

Vice-Presidents—Mr. Justice Sullivan, Mr. Sheriff Jarvis, and Mr. Wm. Baldwin.

Directors—Mr. George Allan, Mr. George Buckland, Dr. W. Nicol, Mr. H. Y. Hind, and Mr. Collier.

Treasurer— * * *

Secretary—Professor Croft, King's College.

BRIEF HINTS ON SOWING AND RAISING CULINARY VEGETABLES.

Most kinds of seeds grow more freely if soaked in soft water from 12 to 48 hours before sowing. Seeds of a hard nature, such as blood-beet, mangel wurtzel, nasturtium, &c., often fail from want of attention to this circumstance. Rolling the ground, after sowing, is very beneficial, and will assist in making the seeds vegetate more freely. Where a roller is not at hand, it may be done with the back of a spade.

Kidney, or French Beans, may be planted any time this month (May), in drills two inches deep; the beans two inches from each other; the drills about 18 inches apart. If a regular succession is required, sow a few every two weeks, from the 1st of May to the 1st of July.

Broad, or Windsor Beans, do not succeed well in this climate, the summer heat coming on them before they are podded, which causes the blossoms to drop off. The best soil to grow them in is a rich, stiff clay, and on a northern border, shaded from the midday sun; sow in drills two feet apart, the drills two inches deep, and the seeds 3 inches asunder.

Blood-Beet, Long, and Turnip may be sown in a good, rich, deep soil, about the first week of May. Draw drills about a foot apart and one inch deep; sow moderately thick; when the plants are up strong, thin them out to the distance of six inches from each other in the rows.

Broccoli and Cauliflower require a deep, rich soil, of a clayey nature, and highly manured. To produce early cauliflower, or broccoli the seed ought to be sown in a hot-bed, early in March, when the plants are quite strong and hardy. They may be planted out in the garden, about the middle of May. Plant in rows, two feet square. The only kinds that will do well in this climate are the Early London Cauliflower, and Purple Cape Broccoli.

Cabbage, both early and late, may be sown any time in May. The best situation for raising the plants is a rich, damp piece of ground, partially shaded. Seed sown in a situation of this kind is not so subject to be destroyed by the black flea. When the plants are strong, they may be planted out in rows, and managed the same as directed for cauliflower. The best kinds for summer use are the Early York, Battersea, and Vannack; for winter use the Drumhead, Large Bergen, and Flat Dutch.

Cucumbers may be sown in the open ground any time in May. They require a good, rich soil. Sow in hills, four feet apart, leaving only three plants on each hill. The cucumber and melon vines are liable to be attacked by a yellow fly or bug. Soot, charcoal dust, or soap suds, applied to the plants, will assist in keeping them off.

Musk and Water Melons may also be sown at the same time, taking care to sow the different kinds a good distance apart from each other, as they are apt to mix. Plant in hills, six feet square, leaving only three plants on each hill. When the plants have grown about six inches, stop or pinch out the top of the leading shoot; which will make the plants throw out lateral shoots, on which you may expect to have fruit.

Carrots.—The most suitable ground for growing carrots is a deep, rich soil, that has been well manured the previous year. Sow any time this month, in drills one foot apart, and one inch deep. When the carrots are up, thin them out, four inches apart, and keep the ground free from weeds. The kinds that are generally sown in the garden are, the Early Horn, Long Orange, and Red Surrey; for field culture the White Belgian and Altringham. The produce of one acre of field carrots, when properly cultivated, may be rated at from 500 to 800 bushels. In cultivating them on the field system, the drills ought to be two feet apart, and the carrots thinned out, at least, twelve inches asunder.

Celery.—This vegetable is much esteemed as a salad. It requires considerable attention to grow it to perfection. To have early celery the seed requires to be sown in a hot-bed, in the month of

March; for winter celery, the seed may be sown in the open ground, any time before the middle of May. Sow on a small bed of fine, rich earth; beat the bed down with the back of the spade; sift a little fine earth over the seed; shade the bed with a mat or board until the plants begin to appear. Celery plants ought to be pricked out into a nursery-bed as soon as they are two or three inches high. Cut their roots and tops a little, before planting; water them well, and shade them from the sun until they begin to grow. Let them remain in the nursery-bed about one month, after which they will be fit to transplant into the trenches. The best sort of soil to grow celery in is a deep, rich loam, and in an open part of the garden. Mark out the trenches a foot wide, and three feet between each trench. Dig the trenches one foot deep, laying the earth equally on each side. Put three or four inches deep of well rotted manure into the bottom of each trench; put a little of the surface-soil over the manure; dig it well up, incorporating the soil well with the manure; dress the plants, by cutting off the long leaves and the ends of the roots. Plant in single rows, along the centre of each trench, allowing six inches between each plant. Water them well, and shade them from the sun until the plants begin to grow. In earthing up celery, great care should be taken not to cover the heart of the plants.

Lettuce is easily raised from seed, which may be sown from the 1st of April to the end of June. If good headed lettuce is wanted, the plants should be transplanted out on a rich piece of ground, in drills, 12 inches apart, and six inches in the drill. The Malta, Green Coss, and Victoria Cabbage are the most suitable kinds to sow, as they head without tying up.

Onions.—The yellow and large red are the best for a general crop. The ground for onions should be well prepared, by digging in plenty of well-rotted manure. The seed may be sown from the middle of April to the middle of May. Sow in drills, one inch deep and 12 inches apart. When the young onions are up, thin them out to the distance of three inches apart.

Parsnips require a deep, rich soil. Sow in drills, one inch deep, and the drills 15 inches apart. Cultivate the same as directed for carrots.

Radishes should not be sown in the open air sooner than the middle of May. They require a deep, sandy soil, that has been well cultivated and manured the previous year.

Rhubarb is a perennial plant, and may be raised from seed. Sow about the middle of May. When the plants are one year old, they should be transplanted into a very deep, rich soil, in rows three feet apart. The foot-stalks of the leaves should not be cut until the plants are two years old.

Salisfy is an excellent vegetable. The roots, when properly cooked, resemble oysters in flavour. The seed may be sown from the 1st of April to the middle of May. They require the same kind of soil and cultivation as directed for carrots.

Spinach is an useful vegetable, and very hardy. Seed sown in the month of September will stand over the winter, and come in for early greens in the

spring. For summer use, seed of round spinach may be sown from May to July. It requires a rich soil. Sow in drills, one foot apart.

Tomatos are much cultivated for their fruit. To have them early, the seed should be sown in a hot-bed, early in March. When the plants are a good size, and the spring frosts are over, plant them out in the garden; let the plants be four feet apart. Plant on a south border, near a fence, and they will produce abundance of fruit.

Turnips.—The best sort for the garden is the Early White Stone, which may be sown from the middle of May to the end of August. Sow in drills, fifteen inches apart, and thin out the plants to eight inches asunder. Field Turnips, such as Swedish, Aberdeen, Yellow, &c., may be sown in drills, two feet apart, about the middle of May. White Globe, Flat Norfolk, and Red Round will do to sow about the middle of July. Turnips are very subject to be eaten by the black flea. A good remedy is to steep the seed one night in train oil. This will greatly promote germination, and the growth of the young plants.

JAMES FLEMING.

Yonge Street Nursery, April 24, 1849.

HORTICULTURE.

BY MRS. LYDIA H. SIGOURNEY.

If the admiration of the beautiful things of nature has a tendency to soften and refine the character, the culture of them has a still more powerful and abiding influence. It takes the form of an affection. The seed which we have nursed, the tree of our planting, under whose shade we sit with delight, are to us as living, loving friends. In proportion to the care we have bestowed on them is the warmth of our regard. They are also gentle and persuasive teachers of His goodness who causeth the sun to shine and the dew to distil; who forgets not the tender buried vine amid the snows and ice of winter, but bringeth forth the root, long hidden from the eye of man, into vernal splendor or autumnal fruitage.

The lessons learned among the works of nature are of peculiar value in the present age. The restlessness and din of the railroad principles, which pervade its operations, and the spirit of accumulation which threatens to corrode every generous sensibility, are modified by the sweet friendship of the quiet plants. The toil, the hurry, the speculation, the sudden reverse which marks our own times, beyond any that have preceded them, render it particularly salutary for us to heed the admonition of our Saviour, and take instruction from the lilies of the field, those peaceful denizens of the bounty of heaven.

Horticulture has been pronounced, by medical men, as salutary to health, and to cheerfulness of spirits; and it would seem that this theory might be sustained, by the placid and happy countenances of those who use it as a relaxation from the excitement of business, or the exhaustion of study. And if he who devotes his leisure to the culture of the works of nature benefits himself, he who beautifies a garden for the eye of the community is surely a public benefactor. He instils into the bosom of the man of the world, panting with the gold fever, gentle thoughts,

which do good like a medicine. He cheers the desponding invalid, and makes the eye of the child brighten with a more intense happiness. He furnishes pure aliment for that taste which refines character and multiplies simple pleasures. To those who earn their substance by laboring on his grounds, he stands in the light of a benefactor. The kind of industry which he promotes is favourable to simplicity and virtue. With one of the sweetest poets of our mother land, we may say,—

“Praise to the sturdy spade,

And patient plough, and shepherd's simple crook;
And let the light mechanic's tool be hailed
With honour, which, encasing, by the power
Of long companionship, the labourer's hand,
Cut off that hand, with all its world of nerves,
From a too busy commerce with the heart.”

—Lady's Book.

USES OF THE BLACK CURRANT.

The Black English Currant is represented to have qualities that entitle it to extensive propagation. A kind of wine has been manufactured from it, which is celebrated for its medicinal properties. The Boston Medical Examiner, quoted by Fessenden, said of this wine, “It has all the good properties of the best Port, without any of its heating or constipating effects. We could name several instances, where, in great debility and exhaustion, after protracted and severe fever, and from other causes, nothing else could be thought of or taken with pleasure or advantage, in which this wine proved grateful to the palate, and most friendly to the stomach; in which, indeed, it was the principal means of conducting the patient to health and strength. Its exhibition has been attended with remarkable success in the early stages of cholera and dysentery; and again in the latter stages of these diseases, after the symptoms of inflammation or febrile excitement had ceased. It has been strikingly remedial in the low stages of typhoid and bilious fever. We have not room to enumerate many other morbid affections, in which this wine has proved useful. In sore throat, it has for many years, been considered almost a specific remedy.”

These opinions are confirmed by other testimony. Kenrick, in his American Orchardist, says, “From the black currant a jelly is made, of considerable medicinal efficacy; a wine is also made from them, which possesses far superior medicinal virtues to port wine. The jelly has been highly recommended for disorders of the throat, and as a necessary article in the stores of ships sailing to the East Indies. A liquor is prepared from the black currant, which, Mr. Forsyth states, is possessed of great medicinal efficacy in obstinate coughs, &c. The currants for this purpose are bruised, and, being placed in a jar, whiskey or any other species of alcohol is poured over them; the jar is then covered close for a fortnight; after this, the liquor is strained and bottled.”

The jelly from the black currant is further described as being fine for the table, and the wine as of peculiar flavour, which, to those long accustomed to its use, is delectable.

A friend of ours, who has many years made use of this currant in his family, as a remedy for some

of the above-named infections, especially for diarrhoea, fully concurs in the foregoing estimate of its value. He considers it also excellent as a preserve. —[Michigan Farmer.

ON THE CULTIVATION OF THE STRAWBERRY.

Persons who expend no scientific knowledge or care on their gardens are constantly complaining of failures with their strawberries. The wonder really is, not that they should often be disappointed, but that they should ever succeed.—Were it not for the *vis medicatrix nature*, which so often helps men out of their scrapes and blunders, in spite of their ignorance, many gardens would produce no fruit at all. The treatment of the strawberry is often at variance with every physiological principle. The plants are the runners of old stools, which have remained in the same spot for many years; the beds are allowed to be smothered with weeds, after the crop is gathered, until, in the autumn, a scythe mows off the whole produce—weeds, leaves, and sometimes crowns, in one promiscuous heap. In this *saure qui peut* style, the bed is left to the chances of another year, and a dressing of dung completes the annual process. It cannot be wondered at, that after this summary treatment the crop should be poor in quantity and quality, contrasted, indeed, in every respect with that of a more thoughtful cultivation. Autumn is the time to clear off all runners and weeds from old beds, and to make new ones; that is, if weeds have been allowed to grow, and runners to accumulate, neither of which will be the case in a well managed garden. However, many amateurs sadly neglect these common-place matters, in attending dahlias and other fancy things; and in their case the only remedy is, to clear the plantations at once. Carefully remove all runners, and where the plants are too thick, some may be dug up, or portions of the crown taken away, to allow ingress to the sun and air.

Do not interfere with the leaves, unless you find any withered, when they can be of no further use. On the healthiness and long-continuance of the foliage this year, will depend the strength and fruitfulness of your plants next season. We explained the reason of this in a recent paper, “On Asparagus,” and need not go over the same ground again. Another reason why leaves should be allowed to remain on the strawberry plants was stated by a writer in the “Gardeners' Chronicle,” some time back; they preserve the incipient fruit-buds from frost during the winter. It has been found that very severe winters are followed by failures in strawberries, caused by the attacks of frost on the crowns; consequently, the protection of the foliage may be a matter of importance. A good dressing of rotten manure may be supplied, either laid on the surface, or slightly forked in. The roots of the plant must on no account be interfered with. In making new beds, let the ground be trenched to the depth of two feet, at least, and well mixed with rotten dung. When the soil is settled, put down

plants, in rows, three feet apart, and half-a-yard distant from each other. Nothing is gained, but much is lost by close planting. There should be room to walk between the rows, and it will be seen that three feet is scarcely enough to allow of this. Each plant should be isolated, if the finest produce is wanted. Light, air, and solar heat will thus be supplied in the largest possible quantities, with the most beneficial results. The plants themselves should have been trained in a nursery bed, early in the season; and if they have been so treated, they will now be a good size. Remove them with balls of earth, so as to disturb their growth as little as possible. But if you have made no provision for new plantations, you must take up with a trowel the strongest of your self-rooted plants from the old beds. Fix every plant firmly, and your work is done, unless you like to put a little short litter, to protect them from the frost. Thus treated, a bed of strawberries will bear a little fruit next year, and a full crop the year after. Two full crops is as much as should be expected from any strawberry plant, and after that the beds should be destroyed. By making a fresh plantation every year, you will always be supplied, and not run the risk of being laughed at for expecting fruit from plants which, in the common course of events, have become barren.—[Gardeners' Chronicle.

CULTIVATION OF MELONS.

There are many varieties of the melon (*Cucumis melo*), of which the best may be considered as "Skillman's Nettled," the "Green-fleshed Citron," the "Green-fleshed Nutmeg," the "Large Yellow Cantaloup," the "Green-fleshed Persian," the "Musk-scented," and the "Pineapple." Of these, the first three are generally cultivated throughout the United States, and abound in our markets for at least three months in the year. It is already known to many of our readers that this city is greatly indebted for this luxury to several families of the name of Bergen, who annually cultivate some hundred acres, near Gowanus, Long Island, and at Shrewsbury, New Jersey. Although not a sure crop, we have been informed that an acre of their land, well tilled, will yield from \$100 to \$400 worth of melons in a season.

The soil best suited for the melon, in open culture, is a light, sandy loam, similar to that of the southernly end of Long Island and the adjacent shores of New Jersey. The ground should be ploughed or spaded, from twelve to eighteen inches deep, and well pulverized with a harrow or rake. The proper season for sowing is at the time the peach tree is in bloom; for if you planted earlier, there would be fear of their being cut off by frosts. The seeds may be sown in broad hills, 18 inches in diameter, and 5 feet apart from centre to centre, each supplied with a shovelful of well-rotted stable or barn-yard manure. In order to guard against accidents, at least 20 seeds should be scattered in a hill, which should be covered with finely-pulverized earth at about the same depth as in planting Indian corn.

Soon after the plants are up, and begin to show their second leaves, they may be weeded with a hoe, and a portion of them thinned out, still leaving enough to guard against accidents or the depredation of worms. In the course of the summer, before the vines begin to spread, two furrows should be run between the rows, with a cultivator or plough, turning the earth directly from the plants, which should be freed of weeds, and reduced in

number to five or six in each hill. A few weeks later, a second ploughing should take place, turning the earth towards the vine, when a broad, flat hill should be formed slightly hollowing in the middle, so as to receive and retain the water supplied by irrigation or from the fall of rains. After this, no farther attention is required except in keeping down the weeds, and in guarding against worms.—[American Agriculturist.

CULTIVATION OF CELERY.

The kinds of celery (*Apium graveoliens dulce*) preferable for general culture, are those known by gardeners under the name of "Common Upright Italian," "Large Hollow Upright," and the "Solid-stalked Upright," all of which may be raised from seeds, sown in the middle and northern states, with slight forcing, from March till the first or second week in May. One ounce of seed is sufficient for 10,000 plants, and may be sown in drills 6 inches apart, in hot beds, or rich mellow borders, after the manner of cabbages, watering moderately in dry weather both before and after it is up. As soon as the plants are 2 or 3 inches high, they may be transplanted 3 or 4 inches apart, in a sunny situation, into temporary beds, formed of old hot-bed dung, or well-rotted stable manure, mixed with one-fourth of its bulk of finely pulverized earth. These beds should be laid 6 or 7 inches thick on a plot of ground having a surface made hard by compression, or one that has not been broken by the spade or the plough, in order to prevent the pushing of tap roots, and thereby prevent the celery from running to seed, before the following spring. The nursing plants should be watered daily until they have taken root, and as often afterwards as the dryness of the weather may require.

When the plants have acquired a height of 6 or 8 inches, they may be removed, in monthly succession from June until September, into a soil rather moist, and rich in vegetable mould, but not rank from new or unrotted dung. Previous to the last transplanting, the ground should be thoroughly worked with the spade or plough, to a depth of 12 or 18 inches, according to the nature of the soil, and then divided into trenches 12 inches deep, 18 inches wide, and 4 feet apart from centre to centre. The trenches should next be filled, 9 inches deep, with a compost of well-rotted dung, mixed with one-fourth of its bulk of strong sandy loam. The plants should be taken up from the nursery beds, with as much soil as will conveniently adhere to their roots, and after removing the side shoots from the stems, they may be set, by hand, 9 or 10 inches apart in the centre of each trench, watering them as often as the weather may require, until they are ready to be earthed up.

As the plants in the trenches rise from 10 to 15 inches high, you may commence "landing," or "earthing," them up for blanching; but never do this while they are wet. In the first two mouldings, the earth should be sparingly raised to the stems, forming a slight ridge on each side of the rows, and leaving a hollow to receive the full benefit of the waterings or rain. When the plants become strong enough to bear a mould 6 inches in height, the earth may be drawn up equally on each side, preventing it as much as possible from falling

into the hearts of the plants by keeping closely together the outer leaves. This may be done by tying together long bands of bass matting, fastening one end to the outer plant in the row, then passing it to the next plant, giving it a turn round the leaves, and so on till the row is complete. When the moulding is finished, the string may be unravelled and used for the next row. The operation of earthing up should be repeated once or twice a fortnight, until the plants are ready for use, gradually diminishing the breadth of the top of the ridge, until it is drawn at last to a point near the tips of the plants.

The celery intended to be preserved during winter should be unearthed and cut off close to the roots. A ridge of earth should next be formed of a height corresponding to the length of the heads, which should be placed parallel to each other up and down the sides of the ridge. More earth may then be banked against these heads, and the operation alternately repeated until you dispose of the whole crop. If the celery thus prepared be liable to suffer from frost, the surface of the deposit should be covered with a layer of litter or straw from 3 to 9 inches thick, which may be removed as fast as the heads are dug up for use. [—American Agriculturist.

SALT AS A GARDEN MANURE.—I can strongly recommend a dressing of this manure (except on very stiff land.) To grow asparagus and seakale in perfection, it is essential, and I find a general improvement effected by its use in the bulk and quality of our culinary crops; it also destroys snails and other insects. For general crops, about $\frac{3}{4}$ lb. to the square yard will be sufficient; this should be sprinkled evenly over the ground when it is bare, and if dry, forked in immediately. To the crops of seakale and asparagus twice this quantity may be given; it should be spread over the beds in winter, or early spring, and either forked in at once or left to be dissolved by the rain. [Agricultural Gazette.

TREE PLANTING.

We need hardly urge upon planters, the necessity of the utmost care in every particular. The ground should be thoroughly prepared. In all cases it should be, as we have often said, trenched or subsoil ploughed, and properly enriched, so that the young roots may spread out freely on all sides, and find abundant nourishment. If people were half so zealous in the proper preparation of the ground, in the planting well, and in the after culture of trees, as they are in seeking for trees of large size, they would find their labours much more successful and profitable in the end. Many we have known to utterly refuse to plant a tree because it was not so tall that the "cows could not reach its branches." Such persons have much to learn about trees.

The well-informed, careful cultivator cares but little for size, if he gets a good, healthy, well-grown plant of the right sort. The purchaser of young trees has the advantage of shaping them to his own taste and convenience—and this is a consideration of some consequence.

The careful treatment of the roots is another important point. They should neither be bruised, broken, nor exposed to the air until they get dried.

After being well planted they should be neatly tied to stakes, and have the surface of the ground around them cleaned and loosened every two or three weeks during the growing season. With such care, it is surprising how soon trees attain size and fruitfulness; and without this care they had better never be planted.

By way of answering several correspondents in regard to distance, we subjoin the following table, which according to our experience is about right, in general.

Apples.	Form.	Stocks.	Distances
Apples,	Standard,	Common,	30 to 40 ft.
"	Pyramid,	Com'n or Doucain	10 to 12 "
"	Dwarf,	Paradise,	6 "
Pears,	Standard,	Pear,	30 "
"	Pyramid,	"	12 "
"	"	Quince,	9 "
"	Dwarf,	"	6 "
Cherries,	Standard,	Mazzard,	20 "
"	Pyramid,	Mahaleb,	10 "
"	Dwf. bushes	"	6 "
Plums,	Standard,	Plum,	18 "
"	Pyramid,	"	9 "
Peaches,	Standard,	Peach,	18 "
"	Pyramid,	Plum,	9 "
Apricats,	Standard,	Peach or Plum,	18 "
"	Dwarf,	Plum,	10 "
Nectarines	"	"	10 "
Quinces,	Standard,	"	12 "
"	Pyramid,	"	9 "
Currants,			4 feet.
Gooseberries,			4 "
Raspberries,			3 "

—Gen. Far.

WASH FOR FRUIT TREES.—Take equal parts, by measure, of ground plaster of Paris, soft soap, and green cow dung; dilute them with water to the consistency of common white wash; and apply the mixture to the trunks and large branches of the trees with a mop or brush. This will not only have a tendency to destroy or ward off insects, but render the trees more healthy and fruitful.

EXPERIMENT WITH ASPARAGUS.—The London Gardeners' Chronicle gives the following method of growing asparagus at Nice. Take a quart wine bottle, invert it over an asparagus root just rising from the ground, and secure it to its place by three sticks. The asparagus will grow up into the interior of the bottle, and being stimulated by unusual heat and moisture, will speedily fill it. As soon as this has taken place, the bottle must be broken, when the asparagus will be found to have formed a thick head of tender, delicate shoots, all eatable, and as compact as a cauliflower.

CUTTINGS and grafts, when sent to a long distance, should be enveloped in pieces of oil cloth. This preserves them from the action of the air.

THE BEET ROOT was first brought from the shores of the Tagus, and was cultivated in gardens, on account of its elegant leaves and the rich red color of its roots, two hundred years before it found a place on our tables as an esculent luxury.

NEVER grumble at what you cannot prevent; you have no right to grumble at what you can prevent.

Mechanics and General Science.

MR. SHERIFF RUTTAN'S LECTURES ON VENTILATION.

We have perused with much pleasure this useful publication, on a most important subject. No one can reflect on the necessity of a constant supply of pure air, to the health and comfort of man, without perceiving the general want of an adequate provision for the accomplishment of that purpose, in our dwelling-houses and public institutions. How frequently are large numbers of children huddled together in low-pitched school-rooms, without any other means of ventilation than what can be effected (and that is oftentimes very small) by opening the door or windows, a method at some seasons of the year dangerous or impracticable. The whole question is one fraught with interest to every human being, and we look upon those who urge its claims, and endeavour to promote its practicability, so as to meet the actual wants of society, as among the real benefactors of their kind.

Mr. Ruttan has invented and patented an apparatus for the double purpose of warming and ventilating, and, we are informed, with success. There can be no doubt that the common way of warming dwelling-houses in this country is both wasteful as regards fuel, and injurious to health. While Mr. Ruttan's plan would appear to diminish materially the former, it would unquestionably be highly promotive of the latter. We cannot but regret that this useful little work, which consists of two Lectures that the author delivered before the members of the Mechanics' Institution at Cobourg, should have been printed merely for private distribution. So important a subject, treated with so much clearness and ability, ought, we think, to have been fully brought before the public; an object, we trust, the author will not lose sight of, when he has completed his original design. We extract the following paragraphs from the preface, which will show our author's views of the nature and importance of the task he has so ably performed; and we may hereafter furnish our readers with extracts from the work itself, that have a peculiar bearing on important matters of domestic economy :—

"THE subject of the following Lectures, although a matter of the utmost concern to the whole world, appears to have engaged little of the attention of mankind. One reason for this may be, that the importance of breathing a pure atmosphere has never been, until within the last few years, either properly understood or its necessity enforced. Another reason may be found in the diffidence with which every person, who might be really capable of rightly thinking upon the subject, would approach a matter so purely scientific, in the face of the great names which are connected with it either directly or indirectly, in various countries. But the principal reason, it appears to me, is that those scientific men, whose attention may have been attracted by, and who have been capable of investigating the subject, have, for the most part, been inhabitants of such climates as stand in less need of the ventilation of their dwellings. Necessity, it is commonly said, is the mother of invention, and it is therefore natural to sup-

pose that any improvement, especially in domestic economy, which more or less influences *all*, should emanate from those who are likely to be most affected by its operation.

"I have myself, for many years, been anxiously looking for, and expecting some discovery by which the enormous consumption of fuel, to which under our present system of heating our dwellings we are obliged to submit, might be prevented. But what was every body's business, in this as in all other matters, appears to have been nobody's business, and not even an attempt has until now been made.

"It was in the course of my experiments for the economising of fuel, which, for the last few years, has engaged my attention, that I happened to stumble upon the important fact *that the principle involved in the saving of fuel was that by which alone a proper system of ventilation could be carried out!* So that, after all, it appears in this as in all other instances where the true principles of philosophical enquiry have been pursued.—Nature proves herself the most scientific agent!"

FIREPROOF BUILDINGS.

The extraordinary number of fires which now happen, and their great destructiveness, in the towns and villages of this wooden country, render it not only important that owners of property should be careful to *insure*, but that, in all new erections, every practicable precaution should be taken to avoid exposure. In towns and cities especially, blocks of buildings should be as nearly fireproof as possible. The following article, from the March No. of the *London Mechanics' Magazine*, contains some hints which may be of use to our City readers :—

"An interesting paper on this subject by Mr. Braidwood, the Superintendent of the London Fire Establishment, was read last week at the Institution of Civil Engineers. The author analysed the evidence as to the capability exhibited by cast and wrought iron beams for sustaining weights where they were exposed to any extreme changes of temperature. He demonstrated, by a collection of specimens of metal from buildings that had been destroyed by fire, that occasionally the temperature in the conflagration of large buildings rose almost to the melting point of cast iron; and that even in a small fire, beams and columns of cast iron would be so affected by the heat and jets of water thrown upon them, that they would probably be destroyed, and sometimes cause a fearful loss of life; as in many of the so-called fire-proof warehouses of the city, a number of persons employed on the premises slept in the upper floors, and if the lower beams gave way, the whole would be dragged down suddenly—whereas timber beams resisted fire some time, and allowed time for the inmates to escape. Another point which the author considered had not been sufficiently insisted on was the derangement of the brickwork by the expansion of the iron beams at high temperatures, and its sudden contraction on the application of cold water; and also from the mortar becoming completely pulverized by the excessive heat, instances of which have been known to occur. The following were the principles on which Mr. Fairbairn had proposed to construct fire-proof buildings. The whole of the buildings to be composed of incombustible materials, such as iron, stone, or brick. 2. That every opening or crevice communicating with the external atmosphere be kept closed. 3. An isolated stone or iron staircase to be attached to every story, and

to be furnished with a line of water pipes communicating with the mains in the street. 4. The different warehouses to be divided by strong partition walls, and no more openings to be made than are absolutely necessary. 5. That the iron columns, beams, and brick arches be of a strength sufficient not only to support a continuous dead pressure, but also to resist the force of impact to which they are subject. Lastly. That in order to prevent the columns from being melted, a current of cold air be introduced into the hollow of the columns from an arched tunnel under the floors. Mr. Braidwood argued that there could be no doubt, if the second principle could not be defeated by carelessness in leaving a door or a window open just at the time when a fire occurred. The fifth principle showed that Mr. Fairbairn had not laid sufficient stress on the loss of strength to the iron consequent on an increase of temperature; and the last principle, it was thought, would not be likely to answer the purpose, as a specimen of $1\frac{1}{2}$ inch cast-iron pipe, on being heated in the centre, with both ends open, and a current of air passing through it, gave way, on one end being held in a vice, and the other pulled with slight force by the hand, after an exposure of only four minutes in the fire. For these reasons and others, the author submitted that large buildings containing considerable quantities of combustible goods, and constructed on the usual system, were not practically fire-proof; and that the only construction which would render such building safe, would be groined brick arches, supported by pillars of the same material laid in cement. The author was also of opinion that the loss by fire would be much reduced if warehouses were built of a more moderate size, and separated from each other by strong partition walls, instead of being constructed in immense ranges, into which, when fire had once penetrated, it set at defiance all the efforts to extinguish it."—[Athenæum Report.

SCIENTIFIC NOTICES.

No. II.

The second form of precipitate that we will mention is the so called corn-rain, which is no more of atmospheric origin than the sulphur, or golden-rain, described in our last paper. It is frequently observed, in some parts of Europe, that after heavy rains the fields are found sprinkled with bodies which in shape faintly resemble a grain of corn, but are much larger. These substances, when examined, were found to consist principally of the same body that enters largely into the composition of all kinds of grain, namely, starch; and hence, as they are supposed to have fallen with the rain, the phenomenon became known under the name of corn-rain. These grains are sometimes round, more generally oval or conical, and are usually under an inch in length, and from one-twelfth to one-sixth of an inch in diameter. They taste mealy and sweet, but have a sharp, burning sensation in the mouth.

On being examined, by botanists, they were immediately recognised as the roots of a plant called *Ranunculus Ficaria*, or *Ficaria Ranunculoides*, which grows in great abundance in several parts of Germany, where this phenomenon has been most frequently observ-

ed. The plant blossoms early in the spring, and the leaves soon die off, leaving the root-stock with a number (6 to 20) of small tubers, very slightly attached to it, just under the surface of the soil. They are so lightly attached to the stock, that a heavy rain will readily separate them; and if a violent wind occur at the same time, they may easily be blown about over the field; or, if the water should collect, and form an inundation, these tubers may, of course, be carried by the floods to localities where the plant itself is not known to exist. In fact, it has been stated that their bodies are never found except in places to which they may have been carried by floods, although other observers have found them in the streets of a village, and on the top of linen spread out in bleaching grounds, a circumstance which can scarcely be accounted for, unless we suppose them to have been carried up by the wind.

A number of other bodies, however, similar in appearance to grains of corn, have occasionally been found; such, for instance, as the seeds of *melampyrum nemorosum*, *peronica hederaefolia*, &c. &c. The seeds of the latter plant seem to have been beaten out of the capsules by the heavy rain, while the plant itself, having become dry and withered, at the time the phenomenon was observed, had been carried off; or we may suppose the seeds to have been transported from the spots where the plants grew, by the winds; as we have a number of instances on record (*vide* Kamtz' Meteorology) of fruits and seeds being so carried from one place to another.

Lichens are sometimes carried up into the air by gusts of wind, and deposited at a distance, in immense quantities, as has been several times observed in Persia.

RAINS OF ANIMALS.

It has often been stated that small fish, frogs, caterpillars, &c., have fallen from the clouds; and this must be explained on the supposition that they have either been carried up into the air by violent gusts of wind, or else that the rain has brought them forth from their retreats. Every one who has lived in the country, in England, must have noticed the swarms of young frogs which are often found on the roadsides, after a warm rain, in the spring. We need not suppose that these animals have fallen from the atmosphere, but merely that the warm rain has assisted their development, and brought them out.

We have also authentic accounts of fish having fallen from the clouds, more especially in places near the sea-coast; but these must have been carried up with the water by whirlwinds, and may be transported some considerable dis-

tance in the air before they fall, by violent winds.

That caterpillars should sometimes appear to fall from the air, evidently arises from their being carried by the winds from the trees on which they sometimes swarm in such immense numbers.

RAINS OF BLOOD.

It has frequently happened that drops of a liquid resembling blood has been observed on roads, rocks, the roofs of buildings, and other places. The surface of the ground has often been found covered with patches of a blood-red substance: and the water in ponds and ditches frequently acquires a similar colour. This phenomenon, which in the dark ages was regarded with superstitious horror, and generally considered as the precursor of some dreadful calamity, has of late years, through scientific research, become susceptible of a very simple explanation; and it has been found that it is produced by several causes, which have not the most remote connection with the science of meteorology. Thus, it has been found that the so called blood-rain drops are produced by a species of butterfly, which, when emerging from its chrysalis, emits a few drops of a red liquid; and as these insects occur in immense numbers in some years, the marks which they leave will have the appearance of drops of rain; but, as might be expected, these drops are observed, just as often as not, in places to which the rain itself could not possibly penetrate.

The red colour of the water in ponds and ditches, and even in large lakes, and the colour of patches on the surface of moist earth, are owing, in some cases, to living animals of the lower classes; and in others, to plants. Thus, the colour of the water is often caused by myriads of a peculiar kind of water flea, *Daphnia pulex*; or by immense numbers of an Infusorian, named by Ehrenberg the *Astasia hæmatodes*. In many instances, however, the colour is caused by small plants, belonging, generally, to the order *Confervæ*; and of these, a great many species have been observed in various parts of the world. It is these plants which produce the red patches frequently seen on moist ground; for when the gelatinous substance of which these spots consist is examined, under a microscope, it is found to be composed of small threads, of a blood-red colour.

Sometimes, however, the rain or snow which falls is really red, and this colour has been traced to the presence of oxide of iron, or rust, and in one case to a compound of cobalt.

Snow has frequently been found of a red colour. Thus, the phenomenon may be frequently observed on the Alps and Pyrenees;

and in almost every account of Arctic expeditions, we find mention made of immense fields of red, or rose-coloured snow. This colouring matter has been carefully examined, by a number of observers, and has been found to be always of the same, or, at least, of a very similar nature, in every instance, consisting of very minute globules, of a red colour. These globules are evidently of a vegetable nature; but, owing to their imperfect organization, it is difficult to determine precisely to what particular order they belong, whether to the fungi or to the algae. It seems to be also a matter of doubt whether they are produced in the snow itself, or on the rocks first of all, and then washed off. The latter supposition seems the more correct one, inasmuch as the red substance has been found covering immense surfaces of the otherwise naked rocks in polar and mountainous regions.

H. C.

Orillia, 24th April, 1849.

GENTLEMEN,—I much like the "Agriculturist," in its new form, as it contains much intellectual matter, and solid information.

You will oblige me by answering, at your convenience, the following queries:—

What are the botanical names of our different field weeds?

The botanical name of Ironwood?

The composition of the ashes of our various forest trees—maple, bass, birch, ash, beech, &c. &c.; and might not the ashes of different trees be applied according to the nature of the soil and the wants of the crops?

Will it be a good plan to graft or inarch foreign grapes on our wild native vines?

Is there any advantage in crossing together or mixing various breeds, as Ayrshire, Durham, Devon, &c.; or Leicester, Cheviot, South Down, &c., sheep; and what would be the result of so doing?

J. C.

[We have placed several of our Correspondent's queries in the hands of a scientific friend, and will answer some of them, at least, in our next.]

AMPUTATION WITHOUT PAIN.—The Philadelphia Ledger makes the following suggestion:—

Two cases have recently occurred in Schuylkill county, Pennsylvania, in which limbs have been accidentally cut by a swift moving circular saw. In both instances the persons were cleaning out the refuse that accumulates in the dark chamber under the work-bench in which the saw is set. One of them had three deep slips cut between different fingers, up into the hand, one cut after another. The other had all the fingers of one hand cut off; some half way, and others less. In both cases, the persons were not aware of their loss till the sight of blood attracted their attention on coming to the light—so free from

pain was the operation. This suggests the idea of employing an instrument of this kind for similar purposes in surgery. A very light and portable instrument could easily be made to receive its rapid circular movement by hand; and the freedom from pain ought to commend it to speedy use. It would have the further advantage of making the section with greater precision than can be attained with the ordinary surgical knife and hand-saw; and it would not require the same firmness of nerve either in the patient or the operator.

THE WATER HAMMER.—Our unscientific readers may be interested in an explanation of the water hammer. By opening a stop-cock or fountain in a tube, as that of one of the great mains of the Long Pond water, a current is established through the tube, the velocity of which is to that of the jet at the orifice inversely as the square of the diameter of the pipe to the square of the diameter of the orifice.

Thus, if the orifice at the fountain be three inches and the main thirty inches in diameter, and the velocity of the jet be seventy-five feet per second, a current of nine inches per second will be established in the main. If the jet be six inches in diameter, the current in the main will be thirty-six inches, or three feet, per second. Now, the momentum, or amount of motion, is proportional to the amount of velocity multiplied into the weight of the water in motion. The water in four miles and a half of thirty inch pipe, would be something over four thousand tons, if our ciphering is correct. The motion or blow which an instantaneous stopping of a three inch fountain destroys, is that of a hammer of four thousand tons moving at the rate of nine inches a second, or half a mile in an hour, which is just the same blow as that of a hammer of forty tons, moving with the velocity of the jet, or seventy-five feet per second. And in a water pipe this blow takes effect in all directions, the weakest point, if any thing, yielding. When we consider the force of a hammer weighing forty tons,—eight hundred thousand pounds—swung with the lightning velocity of 75 feet per second, we shall see that the strength either of the gate boxes or the pipes is nothing to it, and their only safety lies in the impossibility of shutting a stop-cock instantaneously. As time is employed in destroying the motion, the force of the blow is divided.—[Farmer and Mechanic.

NEW PRINCIPLE IN THE SAW MILL.—Horace Hecock, writing to the Jeffersonian, says he has invented a method of sawing, "calculated, as a general thing, to save the time and trouble of gigging back the carriage, as the saw, after cutting through, is instantly reversed, together with the feeding apparatus, setting the board at the same time to the required thickness, and returns cutting through the log each way alternately, without stopping, until the log is finished." The mill, however, is built with apparatus for gigging back the carriage, for convenience in cutting through the first time, for scantling, &c.—[N. Y. Farmer.

IMPROVED SHOE-PEGGING MACHINE.—This is an invention described in the American Cabinet, the merits of which consist in holding the shoe on rocking, turning, or moving stocks, in the proper position to be pegged together with the simultaneous intermittent movement of the carriage and stock, by means of a cogged and grooved guide pattern, and

traversing guide shaft and pinion, for the purpose of arranging the pegs at uniform distances apart, in lines round the sole of the shoe, and parallel to its edges.

Also, the employment of the turning tube, for the purpose of receiving the charger, and then placing them over the hole punctured in the sole of the shoe by the awl, in the proper position to be driven therein, combines the manner of supplying the turning tube with pegs from the charger at suitable intervals, by means of a vibrating driver.

And lastly, the employment of a spiral chamber or groove to contain the pegs and supply them to the charger, one at a time, by the simultaneous intermittent action of the traversing pusher, and ratchet wheel, or otherwise in combination with the charger driver, turning tube, awl, and punch, arranged and operated in the manner and for the purpose described.—[Farmer and Mechanic.

CHEAP LIGHTNING RODS.—No. 1 wire is said to be an ample protection against lightning, put up as the large rods are. War ships use the wire with complete success.

PATENT SAFETY BRIDLE.—Mr. H. Seitz, of Marietta, Lancaster county, Pa., is the inventor of a very ingenious Bridle for which letters patent were recently granted, whereby it is impossible for the most spirited horse to kick or run away, and perfectly safe for a lady to drive or ride.—The principle on which it is constructed is to hold the horse by the application of a pulley around which the reins are made to pass at the side of the horse's mouth, which enables the rider to exert a great deal of lever power to control the mouth of the animal, and to check him at any moment.

KEEPING WORTHLESS DOGS.—It is universally admitted, that what would keep a dog would keep a pig. It need not be said then, which would be found the most profitable to a poor man's family, at Christmas, a dog for his children to play with, or ham and good bacon to fill their stomachs.

THE ATMOSPHERE.

The positive amount of carbon present on the atmosphere is a question of much interest to the theory of vegetation, and other phenomena of the earth's surface. This question is solved, first, by estimating (which can be done exactly) the total weight of the atmosphere round the globe; next, by taking the fractional proportion which carbonic acid forms of this amount; and, finally, by deducting the further proportion of 27 per cent., which oxygen bears in the composition of carbonic acid, leaving, as a gross result, 3,085 billions of pounds of the element of carbon existing under this condition;—a quantity which, Liebig states, but on less assured grounds, to exceed the weight of all the plants and strata of coal existing on the earth.

The same method has been largely and curiously applied to the ingredients of animal and vegetable bodies, and to the parts of inorganic nature on which they respectively depend; and the results have proved singularly interesting in the natural relations thus disclosed; and of great practical utility in agriculture, and other arts of life.—[Quarterly Review.

Domestic and Miscellaneous.

THE FARMER'S SONG.

Success to the jolly old farmer,
 Who sings at the tail of his plow—
 The monarch of prairie and forest,
 'Tis only to God he may bow !
 He is surely a fortunate fellow ;
 He raises his bread and his cheese ;
 And though hard is his labor in summer,
 In winter he lives at his ease.

When the reign of winter is broken,
 And spring comes to gladden and bless—
 When the flocks in the meadow are sporting,
 And the robin is building her nest—
 The farmer walks forth to his labor,
 And manly and firm is his tread,
 As he scatters the seed for the harvest,
 That yields to the nations their bread.

His banks are all chartered by nature—
 Their credits are ample and sure ;
 His clerks never slope with deposits,
 Pursued by the curse of the poor ;
 His stocks are the best in the market ;
 His shares are the shares of his plow ;
 They bring the bright gold to his coffers,
 And pleasure and health to his brow.

When his fields with rich harvests are teeming,
 And the reapers go forth to their toil,
 None so happy and free as the farmer—
 Possessor and lord of the soil ;
 He sings while he roams his broad acres,
 As none but a farmer can sing,
 And would not change his condition
 For the splendor and pomp of a king.

When his crops are all gathered and sheltered,
 And his cattle are snug in the fold,
 He sits himself down by the fireside,
 And laughs at the tempests and cold.
 A stranger to pride and ambition,
 His duties he strives to fulfil,
 Determined whatever betides him
 To let the world jog as it will.

His trust is in Him who has given
 The seasons, the sunshine, and rain,
 Who has promised him ' seed time and harvest,'
 So long as the earth shall remain ;
 And if from his duties he wander,
 Led on by his venturesome will,
 Through life and his changing relations
 God's providence follows him still.

THE EFFECTS OF COSMETICS ON THE SKIN.

The deep interest I take in the moral improvement of my young countrywomen, more particularly those who are so fortunate as to be the wives and daughters of farmers, must be my apology for the following remarks upon the article in the January number of the *Agriculturist* on the "Effects of Cosmetics on the Skin." I shall therefore ask no other excuse for expressing my difference of opinion, nor for pointing out what I conceive to be mistaken views on the subject, feeling very sure that a little serious reflection will bring your correspondent over to my old-fashioned way of thinking. Let me first say, how-

ever, that I agree entirely with her observations on the different kinds of soap, alcoholic preparations, &c.

We know that all kinds of soap are more or less injurious to a delicate skin, and in cold weather their too frequent use should be dispensed with, as much as possible ; but when necessary, the skin should be protected afterwards, for a little while, from the air. Therefore, when cleanliness requires it for the face and neck, they should be washed just before retiring at night ; and in the morning, nothing more will be wanted than the usual sponge bath of pure, cold, soft water, and a coarse rubber vigorously applied. Some skins will chap under the most careful treatment that can be bestowed upon them ; while others will continue soft and smooth, though exposed to every wind that blows, and seem to be proof against all kinds of domestic labour. For the first of these, the best purifier would be corn, or bean meal, or palm-oil soap, followed by a few drops of honey rubbed on while the hands are wet. Fine dry salt acts very pleasantly on the skin ; rendering it soft and smooth, and has also the advantage of strengthening the system, on which account it is highly recommended by physicians. The best way to apply it, is, to draw on a pair of very coarse cotton or linen knitted gloves, that have been frequently dipped in strong salt and water, and dried after each immersion, and with them rub until the skin looks red, and the blood circulates freely.

But it is the second part of your correspondent's remarks that I intended particularly to notice. That the writer does not speak from personal experience I think is evident, or she would not say that "rouge can be employed, without injury, to brighten a lady's complexion."

Every school girl knows that even the common carmine in her paint box, if put on the cheeks with water, can be washed out without leaving a permanent mark. I have been much in fashionable French society where the use of rouge was not only considered unblameworthy, but in certain cases openly vindicated : yet its deleterious effects upon the skin were undoubted, and openly lamented, as producing a sallow stain, which, as it cannot be removed by ordinary means, makes a continuance of the bad practice seem necessary. And a bad practice it is, in sober sadness, for any woman ; but for women living in this bright, beautiful country—for the wives and daughters of American farmers, *even to think of using rouge and pearl powder, would be ridiculous, could it be contemplated in any other light than as a degradation ?* They, too, who enjoy the glorious privilege, not to be too highly prized, of living in the pure, health-giving breath of heaven,—who are at liberty to exercise daily on horseback, and roam at will over hills and fields. I will not think so badly of them as to suppose that they would condescend to tolerate the use of such misnamed beautifiers. It is true, a pale cheek is not esteemed so lovely as the one tinged with

"Celestial rosy red, love's proper hue,"

nor is a dark, or coarse skin thought so desirable as one fairer and more delicate ; but does not every one know instances among their friends, of faces by nature ugly, to which intelligence, benevolence, and good temper impart the characters of real, soul-like beauty ? Believe me, God's handiwork cannot be im-

proved. And the admiration of strangers is dearly purchased by the loss of the respect of those in whose eyes and hearts alone it should be their ambition to appear to advantage; for the mistaken ones, who resort to these paltry arts, do not deck their faces with rouge and pearl powder, to make themselves more *loveable* to their husbands and brothers. It is not put on when they alone are to see them. No—any garb, any faded looks will do for the beings who ought to make their hearts happier; with whom they are to pass their lives. For whom, then, it may be asked, are they willing to take so much trouble? They who know from experience may answer.

All substances, without a single exception, that are, or can be used to "impart a delicate white tint to the complexion," are decidedly injurious; marring what they are intended to mend.

The "metallic compounds," are justly said to be poisonous, and the effect, even when sparingly used, is to make the skin look parched and glazed. Magnesia, being a mineral substance, is not much less hurtful; and powdered starch, though the least objectionable of any, is seriously injurious by the mechanical action of closing the pores of the skin, preventing the escape of the insensible perspiration which would keep it clear and moist, and finally producing a sickly, unnatural thickness that makes a fair girl, who would otherwise be pretty, look like Jersey veal, bled slowly to death by the butcher! and a brunette more like a piece of old parchment than a lovely young daughter of Eve. Of such an one, in a neighbouring city, I heard a physician remark that this disagreeable appearance, being only skin deep, could be easily removed by the application of a vegetable blister!

But I must close this already-too-long notice; though something might be said of the pangs of wounded vanity that these short-sighted fair ones would suffer if

"Some power the gift would give them
To see themselves as others see them;"

when a warm day, or a little over exertion, by producing a free perspiration throws off the *beatifiers*, leaving the white in disclosed streaks, and the red in unsightly blotches, to the mortification of their friends, and the badly-disguised amazement of the very persons they wished to charm. American women should be ashamed to appear under "false colors."

It has been often asked why the women of England have better complexions, and more healthful looks than those of the United States. The humidity of the climate is doubtless one cause of the greater, and more lasting delicacy of the skin; but the bright bloom of their cheeks is the effect of regular, systematic exercise. English ladies of even the highest rank, wear thick leather shoes, and walk every day six or eight miles without regard to the weather, and with no other object than the preservation of health.

I will close with the assurance, affectionately urged upon all who have had patience to read thus far, that early rising, cold-water bathing, and daily exercise in the open air, as they promote health and cheerfulness, are the only cosmetics that an American woman should dare employ.—[American Agriculturist.

TAKING CARE OF THE PENCE.

One of the hardest lessons for many of our young men to learn is that trite and sterling doctrine of Poor Richard—"Take care of the pence, and the pounds will take care of themselves." But hard and distasteful as it is, we must learn and practice the maxim, or take the still harder alternative of poverty and want.

We have no inclination to teach any of our readers a lesson in miserly meanness and littleness. The miserable Muckrake, who consecrates his energies to the saving of the shreds, and fragments, and sweepings that lie in his path as an ultimate object, is quite as pitiable a being as the most prodigal spendthrift. What we desire is, to save the thoughtless and wasteful from future embarrassment and trouble by putting him upon a course of economy and care-taking in his ordinary expenditures. This is all that is necessary, and all we wish.

Hundreds of young men, some of whom may read this paragraph, might this day have been in possession of a snug little capital, if they had simply dispensed with superfluous indulgences during the time they have been engaged in business. It would have cost no sacrifice of generous feeling, or of respectability of character; and besides the saving of money, it would have been attended with the acquisition of a habit of minute economy, or precise attention to the small details of daily business, which is itself worth more than money; which is in truth the most productive kind of capital.

In this country, and as business is here managed, a little capital gives a young man great advantage, especially if, along with it, he possesses superior business talents and habits. And the fact that he has saved from a small income a snug little sum in the course of a few years, is itself pretty good evidence that he has the right habits and abilities to succeed well; and no introduction or letters of recommendation can speak so loudly in his favour. At the same time, the buoyancy of mind and spirits which this advantage inspires in the young adventurer himself is often a material help to him in his future undertakings. In every respect he appears in favourable contrast to those other young men, who, though placed in circumstances equally favourable, have acquired no property, contracted bad habits, and feel jaded and discouraged by their unfruitful toil.

It has a great and happy effect upon one's own mind and energy to feel that a beginning is made—that a foundation is laid to build upon; and, if for no other reason, for this every young man should look well to see what becomes of his first earnings. It is comparatively easy to add to a stock, however small; less easy to think of beginning one.

We repeat our advice, then, old and oft repeated as it has been. Take care of the pennies, the first earned pennies of youthful endeavour, and the pounds of after life will take care of themselves.—[Dry Goods Reporter.

GARDENING FOR LADIES.

MR. DOWNING, in the February number of the Horticulturist, when urging the ladies to decorate their homes with climbers and creepers—the drapery of nature, more beautiful far than festoons of satin

and gold—says: "All that is most graceful and charming in this way owes its existence to female hands. * * * They are naturally mistresses of the art of embellishment. Men are so stupid in the main about these matters, that if the majority of them had their own way there would neither be a ringlet nor a ruffle, a wreath nor a nosegay left in the world."

Without entirely assenting to the truth of the above, we would say that the ladies have ever been considered, the world over, the almost exclusive patrons of flowers. And we know of no employment—no exercise or recreation—so conducive to health and happiness—none that will bring so effectually the glow of health to the cheek, and of joy to the heart, as GARDENING. It not only furnishes exercise, but exercise in the open air, and that regularly. While riding and other modes of exercise are attended with expense, and inconvenience, and loss of time, and are seldom attended to regularly, even by those most favored: yet she who cultivates a flower garden, and loves flowers, will seldom neglect her daily task. The ever encroaching weeds, the necessities of her plants, call daily for her attentions—and seldom call in vain.

The healthy appearance of English ladies is noticed by all American travellers. And for this they are in a great measure indebted to their passion for gardening. All English ladies work in their flower gardens, from the proudest princess to the poorest cottager.

When the hoe and the spade were almost the only garden implements in use, ladies had some excuse for neglecting to cultivate their gardens with their own hands; but now, implements are made so light and convenient, especially for ladies' use, that there would seem to be no excuse. The *Ladies' Garden Fork* is one of the most useful of these, either in the garden, or among plants in pots. The *Transplanting Trowel* is a light and convenient implement for preparing the ground for small plants, and for removing them to the desired place, without disturbing their roots or checking their growth. We see advertised in the eastern papers *Ladies' Gardening Gloves*; but we would not advise our fair readers to be particular about the *mittens*.

The architect may design, and the builder erect, the stately mansion or the simple cottage; it may be faultless both in design and execution, yet it stands stiff, unmeaning and lonesome;—but let some fair hand surround it with the drapery of nature—leaf and blossom—and it is changed as if by magic; its deformities, if any, are hid, its beauties heightened, and it becomes at once the abode of grace and beauty. —[Genesee Farmer.

SALT OF LEMONS.

In reference to an article in the March number of the "Agriculturist," on removing ink stains, it may be well to remark, that the substance almost universally sold at apothecaries' shops under the name of salt of lemons is nothing more than salt of sorrel. This latter is a very poisonous substance; while the principle contained in the juice of the lemon, which

removes ink stains, is perfectly harmless. Accidents might possibly arise from persons being ignorant of this fact, and employing the so called salt of lemons on an emergency, instead of pure lemon juice. H. C.

HOW TO COOK VEGETABLE MARROWS.

The true vegetable marrow, which does not seem to be much cultivated in this country, does not grow large, and should always be gathered when from six to ten inches in length. The true kind is oblong, and of a creamy white colour; while the excellent Spanish squash, which is perhaps equal to it, is rounder, and mottled green. The full, fresh flavour of the vegetable is obtained much better than by mashing, if the marrow be boiled whole, from twenty minutes to three-quarters of an hour, according to the size. If small, it may be served whole, or, if large, cut up in pieces, the seeds scraped out, and served with melted butter, and pepper and salt. They should always be used young, for when old they are apt to taste woody, like the coarse kinds of squash. H. C.

A MOTHER'S INFLUENCE.—For myself, I am sure that a different mother would have made me a different man. When a boy I was too much like the self-willed, excitable Clarence; but the tenderness with which my mother always treated me, and the unimpassioned but earnest manner in which she reformed and corrected my faults, subdued my unruly temper. When I became restless or impatient, she always had a book to read to me, or a story to tell, or had some device to save me from myself. My father was neither harsh nor indulgent towards me; I cherish his memory with respect and love. But I have different feelings when I think of my mother. I often feel, even now, as if she was near me—as if her cheek was laid to mine. My father would *place his hand upon my head*, caressingly, but my mother would *lay her cheek against mine*. I did not expect my father to do more—I do not know that I would have loved him better had he done more; for him it was a natural expression of affection. But no act is too tender for a mother. Her kiss upon my cheek, her warm embrace, are all felt now, and the older I grow, the more holy seem the influences that surrounded me in childhood.—["The Mother," by T. S. Arthur.

HENS EATING THEIR EGGS.—(T. R. S., Omar, N. Y.) We know of no other preventive for hens eating their eggs, than to keep them supplied with lime and gravel in some other shape, and not feeding them the shells, except very finely broken; and by making their nests in a box so deep and small that they cannot reach them while standing on the edge. Hens that are confined are much more apt to commit this fault, than those running at large.—[Genesee Farmer.

HOW TO RENDER CLOTH, SILKS, &c., WATER PROOF.—Take one pound, each, of common alum, (sulphate of alumina,) and sugar of lead, (acetate of lead,) and dissolve them in six quarts of boiling water well mixed by stirring. When cold, the top portion of the mixture should be poured off for use, as the sediment consists of sulphates of lead, potash, &c. Any article of dress, no matter how slight the fabric, if well saturated with this liquid, and allowed to dry slowly, will bear the action of boiling water, and not permit it to pass through it.

AMERICAN PRODIGALITY.—No observing American comes from the United States to Europe, without soon becoming convinced that economy of living is nowhere so little understood as in his country; and that for nothing are the Americans more distinguished, than for a reckless waste of the means of subsistence. The refuse of many a family in the United States, even in moderate circumstances, would often support, in comfort, a poor family in Europe.—[Colman.]

TO CURE A COLD.—The present winter has been characterised by the severity of colds, with which almost every body has been afflicted. We ourselves have had one, the most obstinate we ever had, confining us to the house for two weeks, and by an almost incessant cough forbidding us to sleep by day or night. We tried various remedies, until we wore them out without realizing any desirable effect, and at last heard of and tried the following, to wit: Take thoroughwort, hoarhound, and pennyroyal, of each a good handful, and boil them in just water enough to extract the strength; then strain off the liquor, and add an equal quantity of molasses, and boil until it forms a candy. Eat freely of this very time an inclination to cough is felt, and your cough will soon leave you. After using this candy for half a day, we had a night of good sleep, and found our appetite much improved next morning.—[New England Farmer.]

BLANKETS.—A medical gentleman, who has had extensive practice, urges the importance of frequently washing these useful articles. Blankets have not only a great capacity for absorbing contagious matter, but will retain for a lengthened period the elements of that contagion in an active state. Not only will they communicate the particular infection with the subject of which they have been in contact, but will frequently excite other disorders to which different persons may be constitutionally liable. It is not sufficient to air this coarse woollen fabric, it must be washed thoroughly and regularly. Visitors among the poor would do well to call attention to this matter, the importance of which is generally so little appreciated.

AGE OF SHEEP DETERIORATES THEIR WOOL.—It has been observed, by the most experienced wool-growers, that the older the sheep the less fine the wool. The wool is said to be of the best quality when the sheep is from two to five years of age: after that it deteriorates. Mr. Blanchard, of New York, states that he has known flocks that yielded wool that sorted number one when young, when older drop down to number two or three. Those who wish to grow the first grade of wool should keep young sheep. Some go so far as not to use a buck after he is four years old.—[N. E. Farmer.]

MUSIC OF SPRING.

"There's music in the balmy breath
Of spring, when from the realms of death
She calls the flowers to life again,
And decks with gorgeous hues the plain,
Then wakes to notes of harmony
The grove's enchanting minstrelsy.
There's music in the murmur low
Of gentle waters rippling by—
There's music in the onward flow
Of rivers in their majesty.
There's music in the bubbling fountain—
There's music on the sun-bathed mountain—
There's music on the earth—
There's music in the air—
And music into birth
Is bursting every where."

RAPIDITY OF INSECT GROWTH.

We know of no growth in animal life so extraordinary as that of the larvæ of insects. We learn from the "Entomologist" text book, that:—"One naturalist, for example, discovered that the larvæ of the flesh-fly, increase their weight at least two hundredfold during 24 hours; and another ascertained by minute calculations on data furnished by the cultivators of silk, that 1,206½ lbs. of leaves are eaten by the larvæ which issue from an ounce weight of the silkworm's eggs. 'It is to be observed, however,' remarks Mr. Westwood, 'that the stomach of these insects, like that of the horse, does not possess the power of dissolving these leaves in the most perfect manner, but only of extracting a juice from them. Indeed this very circumstance is assigned by John Hunter as the probable proximate cause for the voracity of herbivorous larvæ. And hence of the 1,206½ lbs. of leaves actually devoured, 745 lbs. are deposited as excrement in an indigested state. Hence it is evident; that in comparison with the stomach of the perfect insect, in which state but very little food is in general taken, (and in some cases the insect is even totally destitute of a mouth,) the stomach of a caterpillar, and its apparatus for taking its food, must be fully developed; and this is found to be the case, the stomach occupying a considerable portion of its interior, and the organs of the mouth being very robust.—The caterpillar of the goat-moth is three years in arriving at its full size, when it is 72,000 times heavier than when newly hatched; and a silkworm, weighing, when first hatched, 1-100 part of a grain, consumes in 30 days about 60,000 times its primitive weight."

THE COMPOSITION OF BODIES.

We have cause, indeed, to presume, that whenever a particular element is generally present in a compound, and in definite proportion to the other ingredients, such element is essential to its nature, however small the proportion may be. This principle has been continually extended and confirmed, as chemical knowledge advanced, and becomes now the expression of phenomena, which may well astonish those not familiar with the subject. It is exemplified by the carbonic acid present in the atmo-

phere, in a proportion not exceeding one-thousandth part of its weight—and presumably also by the iodine and bromine in the waters of the sea, though here the proportion is yet infinitely smaller. The iron existing in a portion of the blood—the phosphorus found in the medullary substance of the brain and nerves—the fluoric acid in bones—the sulphur in albumen, fibrin, and certain other animal matters—and the silica, sulphur, phosphorus, and the metallic oxides or alkalies, found in different vegetable substances—are a few among the many examples which organic chemistry furnishes of the influence of minute quantities in combination. They are relations of deep interest to us, as wonderful and exquisite provisions of Providence for the purposes of life, and for the mutual dependence of the several parts of creation. What they present in natural combinations, has its counterpart in the artificial chemical union of different substances, where we still find, under various forms, this marvellous influence of small quantities, pervading and changing the sensible properties of large masses or volumes of matter. We can destroy the ductility of gold, by exposing it, when melted, to the mere fumes of antimony. We can variously change the physical properties of other metals by an amount of alloy much less than a thousandth part their own weight. We can detect, by a little starch, the presence of iodine, in a solution of which it forms less than the millionth part. And there are cases where a proportion of calcareous matter, equally small, suffices to alter the sensible properties of the substance through which it is diffused.—[Quarterly Review.]

ENGLAND AS IT IS, AND WILL BE.—It is now the fashion to place the golden age of England in times when noblemen were destitute of comforts, the want of which would be intolerable to a modern footman; when farmers and shopkeepers breakfasted on loaves, the very sight of which would raise a riot in a modern workhouse; when men died faster in the purest country air than they now die in the most pestilential lanes of our towns; and when men died faster in the lanes of our towns than they now die on the coast of Guinea. We, too, shall in our turn be outstripped, and in our turn be envied. It may well be, in the 20th century, that the peasant of Dorsetshire may think himself miserably paid with 15s. a week; that the carpenter of Greenwich may receive 10s. a day; that the labouring men may be as little used to dine without meat as they are now to eat rye bread; that sanitary police and medical discoveries may have added several more years to the average length of human life; that numerous comforts and luxuries which are now unknown, or confined to a few, may be within the reach of every diligent and thrifty working man.—[Macaulay's History of England.]

BONES.—That world-renowned chemist, LIEBIG, says that a single pound of bone dust contains as much phosphoric acid as one hundred pounds of wheat. From this we can easily perceive that there are bones wasted on every farm sufficient to manure the entire wheat crop. This, to many, will doubtless appear strange, but it is nevertheless true.

THE PURITY OF DIFFERENT KINDS OF SALT.

Prof. Beck, of Rutgers' College, has made the following analysis of the different kinds of salt:—

1000 parts Onondago coarse salt contains pure salt 991 parts. 1000 parts Onondago dairy salt contains pure salt 974. 1000 parts Turk's Island salt contains pure salt 984. 1000 parts Cheshire crushed rock salt contains pure salt 986 parts.

If this be true, why is it that farmers and beef and pork packers still prefer Turk's Island or Liverpool (Cheshire) salt? This fact is notorious. If Onondago salt was better, would they not find it out! —Buff. Com.

LEPIDIUM RUDERALE.—In the fifth volume of the "Bibliotique Universelle de Geneve," No. IX., September, 1836, page 203, Mr. Fournel, member of the Sciences of Mentz, and of the Institute, says as follows:—"In the spring I had gathered about 100 plants of a herb called by botanists *Lepidium ruderales*, and had put them upon a shelf in my room (cabinet), after I had dried them. From that instant the bugs, which were in great numbers in the apartment, appeared reduced in number, and ended by completely disappearing. I was far from suspecting the cause, when some time after, upon opening the paper in which the *Lepidium* was wrapped, I saw a prodigious quantity of those insects, placed like swarms of bees upon each branch, each leaf, and even upon each seed (fruit). The paper was covered with eggs, and the bugs were, for the most part, dead or benumbed. In the third volume of "Withering's Botany," page 556, the *Lepidium ruderales*, which is a British plant, is described, and reference is made to many figures of it. Its English name is there said to be narrow-leaved *Dittander*. It is said to grow on rubbish, and on the sea-coast; at Maldon, Essex, Lynn, and Clay, in Norfolk, plentifully; on rubbish on the side of the Severn, above Worcester, and near King's Weston, below Bristol. He says that the plant smells like a fox.—[From Bell's Weekly Messenger, England.]

SALTING MANURE.—Mixing salt with stable and other manures has a great tendency to prevent the development of grubs and vermin, which are frequently bred in dung when carried unsalted to the fields.

ENJOYMENT.—If we would enjoy ourselves, we must take the world as it is—mix up a thousand spots of sunshine—a cloud here and there—a bright sky—a storm to day—a calm to-morrow—the chill piercing winds of autumn, and the bland reviving air of summer.

LONGITUDE.—"Archibald, my son, What is longitude?" "A clothes line, pa." "Prove it, my son." "Because it stretches from pole to pole."

CONONDRUM.—Why is a lady, while dressing her fingers, like one in distress? Because she's *ringing* her hands.

SOPHISTRY, is like a window curtain—pleasing as an ornament, while its true use is to keep out the light.

TO KEEP BIRDS FROM FRUIT.—Suspend in the trees or vines a piece of looking-glass by a string, so as to turn freely in every direction. No bird will come near, after a trial or so, unless very tame.

Editors' Notices, &c.

SOLUTION OF ARSENIC AS A STEEP FOR GRAIN.—

We regret to inform a Correspondent at Port Maitland (whose name we cannot call to mind) of our inability to publish his interesting and valuable article on steeping seeds in arsenic, &c.; the manuscript, with the printed extract from the *Lancet*, having been destroyed in the late disastrous fire. We shall feel greatly obliged if our Correspondent will take the trouble to re-write his paper. Personally, we have had no experience of this kind of steep; but some few years ago the attention of Agriculturists at Home was strongly drawn to certain very favorable statements of the effects of several chemical solutions as steeps for grain; our impression is, that the results, upon repeated trials, fell much short of the expectations held out. The steeping some kinds of seeds, even in common water, before sowing, is, no doubt, a beneficial practice.

GOLD OF PLEASURE. For a like reason, we cannot insert the article of T. C., *Guelph*, on the culture of this plant. We shall be happy to hear from him again. The introduction of new seeds is a matter of great moment to the Agricultural interests of the country.

G. L.'s Communication, on the management of *Asparagus*, we are also deprived of, from the same cause, together with other matter, original and selected.

W. B., Flamboro' West. We are not aware of any machines in this country for making draining pipes and tiles. There are several kinds in England, most of which have stood the test of several years' trial. We will turn our attention to the matter before long, as it is of pressing importance to an improved system of Agriculture in this country.

Z., Niagara. We are of opinion that the use of a heavy roller would have a tendency to check the progress of the wireworm. We have tried it many times, with more or less success. The roller is also most destructive to the slug. For this purpose it should be used early in the morning, when the ground is damp, as these destructive creatures are then found on the surface. Rolling the ground well, after sowing spring grain, particularly clover and grass seeds, is a practice to be strongly recommended; it brings the soil and seed into more immediate contact, thereby promoting the important process of germination, while it tends to check a too rapid evaporation of moisture; objects of great importance during the frequent parching weather we experience in May and June, in this country.

INQUIRER. Several of your questions are of so difficult a nature as would require much time and space for a full reply. We will keep them in mind, and hope to be able to satisfy your curiosity, to some extent at least, as early as practicable. *Inquirer* should bear in mind that there is a large number of phenomena involved in Agricultural and other kindred pursuits, on which the present state of knowledge can throw but little light. Discovery and advancement must necessarily be progressive.

SOWING GRASS SEEDS. We beg to refer our *Newcastle Subscriber* to previous papers of the present number, in which he will find some valuable information.

GREAT FIRE IN TORONTO.

Many of our readers will no doubt have heard, before they see this paper, the particulars of the destructive fire that recently occurred in this City. A large portion of the most central and business part of the City has been reduced to ashes. Not less than £100,000 worth of property has been destroyed. Almost among the first buildings burned was the printing-office of Messrs. Rowsel & Thompson, our publishers; and so rapidly did the fire consume, that only a small portion of the contents of the printing-office was saved. About half the matter for our May number was in type when the fire occurred. All this was lost, as well as the copy, communications, books, &c. &c., that had been supplied to the printer. A number of cuts, our stereotype vignette, and a quantity of paper was also burned. Fortunately, we had removed the surplus copies of our back numbers, so that our sets are unbroken; but still we are losers to the amount of several pounds, besides the delay and inconvenience. This number, as our readers will perceive, differs a little in appearance from the other numbers, owing, chiefly, to the difference in the type. The paper is a little better in quality, and is what we shall endeavour hereafter to procure. We had the precaution to order two or three plates of our head, or vignette, which is a more expensive affair than many persons may suppose, and, having them at another place, we are able to keep up our outside appearance as usual. As to the *inside*, we trust our readers will find something there worth their attention, notwithstanding our loss; and those Correspondents whose Communications became a prey to the flames before they had, properly speaking, seen the light, will perhaps be good enough to re-write them? Two or three that this unfortunate accident has kept from our readers possessed unusual interest. One has been furnished a second time by the writer, who happened to come to the City; and we hope the others will appear in a future number.

For any delay, deficiency, or neglect, the calamity we have mentioned must be our excuse. Our enterprising publishers will be able to supply every thing required on their part before another issue, in a style superior, if possible, to the past.

TORONTO MARKET.

APRIL 30, 1849.

Flour, per barrel, of 196 lbs.	16	3	to	21	3
Wheat, per bushel	3	6	"	4	9
Oats, per bushel, 34 lbs.	1	0	"	1	2
Barley, per bushel, 48 lbs.	1	8	"	1	10½
Rye, per bushel, 56 lbs.	3	0	"	3	4
Pease, per bushel, 60 lbs.	1	6	"	2	0
Potatoes, per bushel	3	0	"	3	4
Beef, per 100 lbs.	12	6	"	20	0
Pork, per 100 lbs.	17	6	"	20	0
Bacon, per cwt.	25	0	"	30	0
Hay, per ton	45	0	"	60	0
Straw, per ton	25	0	"	30	0

CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. v. 9.

GEORGE BUCKLAND, }
WILLIAM McDUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, JUNE 1, 1849.

No. 6.

The Canadian Agriculturist,

A MONTHLY JOURNAL OF AGRICULTURE, HORTICULTURE, MECHANICAL AND GENERAL SCIENCE, DOMESTIC ECONOMY & MISCELLANEOUS INTELLIGENCE: Published by the Proprietors, W. McDUGALL and GEO. BUCKLAND, on the first of each month, at their Office, near the South-west corner of King and Yonge Streets, Toronto.

Subscription ONE DOLLAR, in advance. Advertisements 4d. per line each insertion.

Societies, Clubs, or local Agents ordering twelve copies and upwards, will be supplied at 3s. 9d. per copy.

Money, enclosed in a letter, and addressed to the "Editors of the Agriculturist, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, need not wait to be called upon.

Payment in advance being the only system that will answer for a publication so cheap as ours, we shall send the remainder of the volume to none but those who order and pay for it.

Subscribers who desire to continue the work, will do well to send their orders without delay; for, as we do not mean to print a large edition, with the view of having a surplus, we cannot promise that at the end of two or three months we shall have any back numbers on hand.

TRAVELLING AGENTS.—Mr. T. M. Munn is our Travelling Agent for the Eastern section of the Province; Mr. Palmer for the Northern; and Mr. James Wilson for the Western: who are authorised to receive subscriptions for the last year's volume as well as for the present.

LOCAL AGENTS.—Any person may act as local agent. We hope that all those who have heretofore acted as such will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending four subscriptions. Those sending twelve and upwards will be supplied at 3s. 9d. per copy.

TORONTO NURSERY.

FOR SALE, an extensive collection of FRUIT TREES, consisting of all the choicest sorts of Apples, Pears, Plums, Cherries, Peaches, Grape Vines, Raspberries, Gooseberries, Strawberries, Currants, Asparagus, and Rhubarb Root, &c.

Also, Ornamental Trees, Flowering Shrubs, Hardy Roses, Herbaceous Flowering Plants, &c., in great variety.

Descriptive Catalogues, containing directions for transplanting, furnished gratis to post-paid applicants.

GEORGE LESLIE.

March, 1849.

4

CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash Prices for 1000 bushels clean Timothy Seed; 100 bushels clean Spring Tares; 100 bushels White Marrowfat Pea; and 25 bushels Flax Seed.

JAMES FLEMING,
Seedsman and Florist.

Yonge Street,
Toronto, Jan. 1, 1849.

1

Advertisements.

GENESEE
MUTUAL INSURANCE COMPANY,
CAPITAL, 800,000 DOLLARS.

THIS well-known Insurance Company, having extended its business into this Province during the last year, has appointed Mr. McDUGALL, one of the Editors of the "Agriculturist," Agent for Toronto and Vicinity.

The Company is established on the soundest and most approved principles; as the success which has attended its operations, since its establishment, thirteen years ago, fully proves. Very hazardous risks are not taken; and the Company will not insure in one risk more than £1,250, nor more than £1,500 upon property so situated as to be exposed to destruction by one fire. No insurance will be taken to a greater amount than two-thirds the value of the property. These, with other precautions strictly observed, have made this one of the *cheapest and safest* Companies to be found.

The high character which the Company has obtained for honourable dealing and promptitude in settling losses, renders it worthy the notice of all Canadian Insurers.

Office Agency for Toronto, &c., at the Office of the "Agriculturist," South-west Corner of King and Yonge Streets.
Toronto, April, 1849.

ADELAIDE ACADEMY,
FOR THE EDUCATION OF YOUNG LADIES,
Corner of Bay and Wellington Streets,
TORONTO.

THE next Session of Adelaide Academy will commence on Thursday, the 4th of January, with Lectures on Chemistry and Astronomy.

Pupils are received at any time during the year, except from the 1st of July to the 24th of August.

Competent and experienced teachers are engaged to give instruction in all the solid branches of an English Education, in Instrumental and Vocal Music, Drawing, Painting in Water Colours, Oil Painting, Miniature Painting, &c.

Lectures will be given to the classes in Natural Philosophy, Chemistry, Astronomy, Physiology, and Biblical History.

The Academy is divided into four departments, with experienced Teachers over each.

Board	£0 10 0	per Week.
Tuition in English Studies.....	1 0 0	Qr..
Board & Tuition in English Studies	26 0 0	Ann.

Pupils attend the Church which their Parents or Guardians direct.

REFERENCE

Is politely permitted to—

The Honourable The Chief Justice,
The Honourable Robert Baldwin,
The Honourable J. H. Price.

Henry Ruttan, Esq., Sheriff N. D.

W. B. Jarvis, Esq., Sheriff H. D.

W. S. Conger, Esq., Sheriff C. D.

Rev. Dr. Richey, Rev. E. Wood, Superintendent of Missions; Rev. H. Esson, A.M., Professor in Knox's College; and to numerous Patrons throughout the country.

For Cards, giving particulars, can be obtained at this office, or at the Academy.

J. HURLBURT, A. M., Principal.
Toronto, 14th December, 1849.

NEW CARRIAGE FACTORY.

WILLIAMS & HOLMES,

HAVE REMOVED their *City Carriage Repository* to 142, Yonge Street, where they have commenced a Manufactory in all its branches. Parties wishing to purchase for Private or Public Business, are requested to give them a call before purchasing elsewhere, as their facilities are such as to enable them to manufacture cheaper than any other Establishment in Toronto.

Toronto, January 1, 1849.

1-tf

N.B.—The public are respectfully invited to an inspection of their Lumber and other Building Materials, as none but the very best will be used.

CHOICE FRUIT TREES.

Rosebank Nursery, near Amherstburg, C. W.

THE Proprietor has for sale a most extensive assortment of all the choicest kinds of Fruit Trees, consisting, in part, of 190 varieties of Apples, 130 of Pears, 70 of Peaches, 70 of Plums, 50 of Cherries, 10 of Apricots, 10 of Nectarines, 25 of Foreign Grapes, native Grapes, Quinces, Gooseberries, Currants, Raspberries, Strawberries, Almonds, Chesnuts, Filberts, Mulberries, &c. &c.

Also, a fine collection of Ornamental Trees and Shrubs, Roses, Tulips, Hyacinths, Pæonies (Tree and Herbaceous), &c. &c.

New descriptive priced Catalogues will be sent to all post-paid applicants. Specimen Trees of every variety cultivated have been planted out, which are mostly in a bearing state, and from which the scions have been cut, offering a guarantee of the correctness of the kinds, which few Nurseries possess.

Trees will be carefully packed so as to carry any distance with perfect safety, a small extra charge made for packing, and they can be forwarded with dispatch to any part of the Province by the Propeller "Earl Cathcart," which will ply regularly during the season between Amherstburg and Montreal, touching at Port Stanley, Toronto, Kingston, &c.

Orders should be sent early, to ensure their going by the first trip of the Propeller. Cash or proper references should be sent with the order.

JAMES DOUGAL, Proprietor.

Rosebank, near Amherstburg,

March 23, 1849.

4-2ins.

GARDEN AND AGRICULTURAL SEEDS.

THE Subscriber begs to inform his friends, and the public in general, that his stock of fresh Garden and Agricultural Seeds for the spring sowing is now complete. The Subscriber's long and practical acquaintance with his business, enables him to select only such kinds of seeds as are most suitable for this climate. The vitality of each sort is fully tested before offered to the public; new varieties and such as are raised in greater perfection in Europe, are annually imported from sources that can be relied on.

Country merchants, and others, wishing seeds to sell again, can be supplied on the most moderate terms.

Cabbage, Cauliflower, Brocoli, Celery, and Tomato plants in their season, carefully packed and forwarded according to order.

JAMES FLEMING,

Seedsman and Florist, Yonge Street.

Toronto, March 1, 1849.

26 1-m.

THE CANADIAN AGRICULTURIST.

VOL. I.

TORONTO, JUNE 1, 1849.

No. 6.

PROVINCIAL AGRICULTURAL ASSOCIATION.

We beg to call the attention of our readers to the claims and wants of this important and valuable institution. In a few months another annual exhibition will take place, and it is highly necessary that timely preparations should be made, and every possible assistance rendered, in order that our next show may prove creditable and honourable to the country. The result must in great measure depend upon the zeal and co-operation of the province at large, and we most sincerely hope that all who feel an interest in advancing the agricultural and other industrial pursuits of the country, will extend to this great and praiseworthy undertaking their cordial good wishes and liberal support. Happily for the Provincial Association, it labours under none of the objections of having a party character; its objects are, in the highest and best sense of the terms, *patriotic and national*; and in these days of political excitement, it must be felt both welcome and refreshing by all generous minds, that we have one society at least, in which men of all parties can meet on *common ground* for the promotion of *common interests*. We hope therefore that the call for support towards the next exhibition, to be held at Kingston, will be generally and liberally responded to, and that the inhabitants of Upper Canada will vie with one another in supporting an institution, the prosperity of which will afford both ourselves and others a very fair criterion for estimating our national progress and civilization. It will be seen from the subjoined resolutions, that Mr. Buckland, the Secretary of the Association, and Mr. Angus Cameron, of Garden Island, near Kingston, are deputed by the executive committee to solicit aid from the Agricultural Societies in the province, and we trust that the officers of such societies will give them an encouraging welcome.

With regard to the society's outstanding liabilities, some measures for discharging them will, we hope, be speedily adopted. Application has been made to Parliament for aid, but as yet no official

answer has been received, although Government, we understand, are quite disposed to render assistance. It will require at least from twelve to fifteen hundred pounds to carry out the Kingston exhibition on a scale at all commensurate with the magnitude of the society's objects. It will be seen from the resolutions inserted below, that the show will be held in the *third* instead of the first week of September, a change which the committee believe will be much to the advantage of the exhibition. The New York fair will take place at Syracuse the preceeding week, when Professor Johnston, the celebrated agricultural chemist, from England, is expected to deliver the annual address. We must endeavour to get the learned Professor to favour us with his presence at our own meeting, and we anticipate the pleasure of seeing a large number of American friends. Kingston possesses many advantages for our purpose; it is easily and cheaply accessible, possesses extensive public buildings, has ample accommodation in its numerous hotels and boarding houses, with a guarantee for moderate charges; and we are happy to add, that the executive committee are in high spirits, in good working order, and looking confidently to the cordial support of the public. The list of premiums will be issued as early as possible, probably the beginning of June.

We have much pleasure in calling the earnest attention of our readers to the address of the President, Mr. Sheriff Ruttan, which will be found on a subsequent page; and of further observing, that the usual liberal premium of £25 from the Canada Company, for the best 25 bushels of wheat grown in the province, will be again given.

AGRICULTURAL ASSOCIATION OF UPPER CANADA.

The Committee met at the city of Kingston, on the 2nd day of May instant, John B. Marks, Esq. Vice-President, in the chair.

The President, H. Ruttan, Esq., laid before the Committee various papers relating to the arrangements and management of the show at Cobourg in 1848.

The minutes of the Committee appointed at

Kingston, were read; and the following resolutions were moved and carried.

1st.—*Resolved*, That the Executive Committee at Kingston, shall advertise, without delay, for tenders for the erection of the necessary buildings and enclosures for the show in 1849.

2nd.—*Resolved*, That places of refreshment be authorized within the enclosure for the show.

3rd.—*Resolved*, That five of the Executive Committee, including the Chairman, shall be a quorum.

4th.—*Resolved*, That said Committee shall meet each Wednesday, at 2 o'clock, p. m., at the office of the District Council at Kingston, for the present, and that the several sub-committees shall meet daily for a few weeks previous to the show in September next.

5th.—*Resolved*, That the show of this Association, for the present year, shall be held on the 3rd Tuesday in September next, being the most convenient period for the Farmers of Upper Canada, generally, to attend the same, seed time being then over, and fruits and horticultural, as well as agricultural products, being then matured for exhibition.

6th.—*Resolved*, That George Buckland, Esq., the Secretary of the Association, and Angus Cameron, Esq., be appointed Delegates to visit the several Districts of Upper Canada, for the purpose of advocating the general interests of the Association, and also of collecting funds for the purposes of the said Association.

7th.—*Resolved*, That Dr. Barker be appointed printer to the Committee of the Association at Kingston, for 1849.

8th.—*Resolved*, that the Hon. John Macdonald, of Gananoque; Aaron Dougall, Esq., of the Prince Edward District; and James Williamson, Esq., of the city of Kingston, be added to the Executive Committee at Kingston, for 1849.

JOHN B. MARKS,
Vice-President Agricultural Association of U. C., and Chairman Ex. Com.
G. A. CUMMING,
Secretary Ex. Com.

Kingston, 3rd May, 1849.

THE POTATO DISEASE.

(Continued from page 114.)

In resuming our notice of the great mass of facts which have been published in detail in the *Gardener's Chronicle*, relative to the potato crop of last year, in the British islands, we have now to call the attention of our readers to what appears to be the most advantageous season for planting.

Autumn planting, that is from October to January, has been but partially practised, but the results are very favourable. Of 64 English returns, 53 are in its favour and only 11 against.

In Cornwall and Devonshire, where the disease was most destructive, those planted in October almost wholly escaped; and as the planting was deferred the disease appears to have increased, particularly on heavy rich land. In Scotland and

Ireland, the few cases of autumn planting that were tried proved successful. *January and February* have proved highly advantageous: out of 142 trials in the south and west of England, 131 cases appear in which the crop escaped, or was but little injured. *March and April* planting appears much more successful in Scotland than in England, which may be explained by the higher latitude and later summers of the former country. In *May and June*, the proportion of bad cases seems rapidly to increase, not only in England, but likewise in Scotland and Ireland. Taking the United Kingdom, and omitting only the more northern portions of Scotland, where the season is naturally late, it appears that in the large number of well-ascertained cases of planting in May and June, only one in three escaped an almost total loss.

The following table shows the result of the calculations, to a few of which we have space merely to allude :

	England, Wales, and Ireland.		Scotland.	
	Bad.	Good.	Bad.	Good.
Autumn	11	56	0	4
January and February	11	131	—	—
March	88	136	3	40
April	147	105	13	91
May and June	155	44	10	23

“Showing conclusively that, for the principal part of the kingdom, the autumn, with January and February, are the best months for planting; that March is unsafe, April dangerous, and May and June ruinous. In Scotland, March is taken as the best month, after the autumn, the rate of loss being about 7½ per cent. in March, 14 per cent. in April; for the country, the May crops, known only in the most northerly districts, may be disregarded.”

The following table shows the cases of entire escape, with the whole number of cases reported upon :

	Wholly Escaped.	
	England, Wales, and Ireland.	Scotland.
Autumn	22 in 67	2 in 4
January and February	34 in 142	
March	9 in 222	20 in 43
April	8 in 250	36 in 104
May and June	4 in 200	8 in 33

“These facts establish the proposition, that the earlier potato planting is performed the better,

and the later the worse." Although the planting of potatoes in autumn is impracticable in Canada, on account of the extreme severity of the winter, yet the earlier planting can be done in the spring, so as to avoid the risks of frost, the more likely is the crop to be free from disease.

The returns likewise point out some undoubted and highly important general facts in relation to the effects of soil on potatoes; our limits, however, constrain us to great brevity. Soils newly broken up and drained, without any dressing of marl or lime, usually called, in Scotland and the north of England *mosses*, in Ireland *bogs*, and in the south of England *peat*, appear very generally, when early planted, to have escaped the disease, at least in its worst forms. 679 cases of English returns, shew only five cases of much disease; out of 182 Scotch, we have none; 92 Irish, only two; and out of 32 Welsh, there was none. The conclusion arrived at is "*that pure well-drained peat moss suffers very little from disease.*"

From heavy and wet lands the returns show, as might be anticipated, a very large proportion of diseased cases; only one instance of escape in every five! Whence the conclusion has been arrived at, "*that potatoes in very rich, wet, or heavy land, are exposed to disease in a most dangerous degree* (as 272 to 9); *unless the land is very dry, or the climate cold, or the planting performed in the autumn, or very early spring.* In other words, not more than one crop in 30 can hope to escape in such land."

With respect to *light land*, upon turning over the great number of returns that have been made during the past four years, it appears that the proportion of severe disease is about a seventh. After taking into consideration all the circumstances which would be likely to affect the result, from a large number of returns, it may be concluded "*that in England the chances are 313 to 24 against the appearance of much disease in light lands unless planting is late, or manuring excessive, or there is a heavy or wet subsoil*;"—in other words, not more than 1 crop in 13 suffers much in light land, if moderately manured, planted early, and not resting on a wet subsoil." We may return to this subject in a future number.

GREAT PLOUGHING MATCH.

It will be recollected by most of our readers that some time ago the township of Whitby gave a challenge to plough with any township in Upper Canada, for a purse of £100, each party to raise a moiety of that sum; £50 to be kept as a reserved

fund, and the winner to be open for twelve months to accept a challenge from any other township.

Scarboro' promptly accepted the challenge, and on Friday, the 11th of May, this celebrated trial of skill in the important art of ploughmanship took place on the farm of Mr. Asa Post, in the township of Pickering. The day was beautifully fine, and vast numbers were attracted to this interesting scene from all parts of the surrounding country, several coming from considerable distances. It was estimated that not less than four thousand persons were present, and the interest manifested in the proceedings of the day was very great. Early in the morning, in all the neighbouring villages, every thing denoted that a great holiday had commenced, bands of music were playing, teams decorated for the occasion, and the leading roads lined with expectant spectators wending their way towards the scene of operation.

The site was judiciously chosen; a large field of strong sod, having a soil of what is usually termed heavy loam, and free from stumps and stones, was the ground on which this interesting trial was to be decided. The requisite number of spaces having been previously measured and staked off (each space consisting, we should suppose, of upwards of half an acre), the competitors started about 10 o'clock. Each township had 20 ploughs, and it was soon evident that the competition would be a keen one, and the work as a whole highly creditable to those engaged in it. As the work proceeded, an impression seemed to gain ground among practical men that Scarboro' would win. This feeling chiefly arose, no doubt, from the uniformly excellent work which the ploughmen of that township were making, although not a single instance occurred of what could be justly called *inferior* ploughing on the part of Whitby. In fact, the Scarboro' teams were superior, the ploughs better, the men had evidently practised more on a uniform system or style of ploughing, laying up the furrow precisely at the angle which makes the work more captivating to the eye, and in short complying with more of those conditions than did their competitors, which modern authorities have pronounced the correct principles of ploughing. In saying this, we would by no means be understood as implying any thing serious to the disadvantage of Whitby, whose work upon the whole was highly creditable. The reader will have anticipated the result, from the tenor of these observations. The judges, without any reference to the umpires, decided in favour of Scarboro'.

We have omitted to say that, of the forty ploughs,

all were made of iron, with only one exception—on the principle of the Scotch swing plough, known as Gray's celebrated pattern. Several, we understand, that were used by the Scarboro' men, were imported. The depth of the ploughing, we believe, was not to fall short of five inches; the average would probably be six. We think it of great importance in all endeavours to improve the ploughing of the country, that *depth* should be specially regarded; since upon many soils, particularly those that have been exhausted by over-cropping and their surface merely scratched over, a deeper amount of active soil is essential to their restoration, and to an improved husbandry.

In the afternoon, the ploughmen, judges, contributors to the purse, and others, comprising 400 or 500 persons, sat down to dinner, in a temporary building erected by Mr. Palmer for the occasion. E. W. Thomson, Esq., President of the Home District Agricultural Society, presided. The toasts usually given on such occasions called forth some useful observations from several speakers. Mr. Peter Perry, who we understand was the principal originator of this trial of skill, made some excellent and good humoured observations in reference to the result of the contest. The proceedings were conducted and terminated in a manner highly to the praise of all parties concerned. Although Whitby, as Mr. Perry observed, had come off "second best," yet the public will bear in mind that had it not been for the enterprising spirit of that township, it is more than probable that the country would not have enjoyed the means which this great contest has afforded of advancing the most fundamental department of that art on which our prosperity is mainly dependant.

It was determined by the joint committee, that as the winner would be open to a challenge from any township in the province, the distance which the ploughmen of such township should be called on to travel should not exceed what might be accomplished in one day, or 25 miles; the challengers must travel the remainder of the distance. We do not expect that Scarboro' will be long allowed undisputed possession of the field. Subjoined is a list of the names of the ploughmen and judges:

The names of the Scarboro' men were—Wm. Addison, English; William Hood, Scotch; Joshua Kennedy, Canadian; John Crawford, Scotch; William Weir, Scotch; James Patten, Scotch; Geo. Evans, English; Conrad Bartram, Scotch; John Torrance, Scotch; James Weir, Scotch; R. Addison, English; James McCowan, Scotch; John Wakefield, English; T. Crowe, Canadian; John Weir, Scotch; Arch. Thompson, Canadian;

— Patterson, Canadian; J. Crowe, Canadian; R. Gilchrist, Scotch; and James Muir, Scotch.

The names of the Whitby men were—George Martin, English; Tobias Hodgson, English; John Thompson, Canadian; Chas. Patton, Canadian; Alexander Anderson, Canadian; James Forest, Canadian; Josh. Crawford, English; John Medcalf, English; Stephen Mares, English; William Parden, Canadian; William Collison, English; Jas. Ketchison, Scotch; James Hamilton, Scotch; Jas. Saunders, Scotch; Henry Rundell, English; W. Sinclair, Scotch; Wilkison Warner, English; Robert Usher, English; Robert Armistron, Scotch; and George Graham, Scotch.

The Judges for the occasion were—R. Hunter, Reach; Thomas Jonas, Darlington; W. Scott, Darlington; David Smellie, Vaughan; J. Louis, Markham; and John Gibson, Markham.

The Umpires were—Robert McNair, Walter Dalzell and Robert Beith.

EDITOR'S BRIEF NOTES.

After attending a meeting of the executive committee of the Provincial Association, held in Kingston, May 2, we were invited to address a meeting of farmers, to be convened on Wolf Island the following day. Accordingly about forty persons assembled in a School House in the afternoon, when we took the opportunity of stating the importance of agriculture—its true principles, the rational interest which it is calculated to excite when intelligently pursued—the desirableness of farmers forming local associations for the encouragement of reading and the discussion of agricultural subjects, theoretical and practical; together with the claims of the Provincial Association on the sympathy and support of all true friends to the improvement and well being of their country. We then intimated a desire to answer any questions touching these matters, which led to an interesting conversation of quite a practical character. Several gentlemen, among whom we may mention the Rev. J. A. Allan, and Angus Cameron, Esq., spoke somewhat in detail of their observation or experience in reference to the cultivation and products of the soil. The necessity and advantages of draining, was a matter unanimously agreed upon, and drains made three feet deep, were considered quite beyond any injurious effects from frost. We observed in a field of Mr. Cameron, on Garden Island, after a heavy night's rain, the portion which had been drained quite sound the next morning, while the undrained part was covered, in many places, with water; the soil a heavy clay resting on limestone rock. It was the prevailing opinion that next to draining, in improving the agriculture of the Island, was a liberal application of lime, which, by a number of farmers joining together, might be obtained in any quantity for 3d. a bushel; applying from 100 to 150 bushels to the acre. Although the whole of these Islands, with a considerable area of country around Kingston, repose on a limestone rock, which in some places comes to the surface, yet there are many localities in which the surface soil contains only a trace of limo. Mr. Allen was

of opinion that farming should be better and more profitably conducted by the farmer giving to his business an unflinching perseverance, and undivided attention. Other matters, such as lumbering, &c., had no doubt retarded the progress of agriculture. He also thought that meadows or pastures resting on clay and limestone, as in that district, might be productive for a great number of years by occasional top dressing. Mr. Cameron spoke on the importance of economising and properly applying manure—particularly not to allow the liquid portion to run to waste, as was almost universally done. We hope this meeting will lead to inquiry and co-operation, and thus be made productive of some practical good.

In returning by land to Toronto, we found farming operations much retarded by the wetness of the weather, through all the districts we had to pass. In Prince Edward a large breadth was unsown, and considerable ploughing to do. A kind of wheat called the *Black Sea*, is largely cultivated as a late spring variety, and much remained to be sown. Many speak highly of it,—but its principal recommendations are its suitableness for late sowing, and its comparative freedom from rust. Fall Wheat was looking tolerably well, not having been severely winter killed; the appearance of this crop improves as one travels west-ward. The season must be considered unusually backward, but a genial summer may more than compensate for the disadvantages of a late spring.

NEW YORK STATE AGRICULTURAL INSTITUTION.

We learn, with much pleasure, from a report of the Committee on Agriculture, obligingly sent us by B. P. Johnson, Esq., of Albany, that the State of New York is soon likely to have an Educational institution and experimental farm, commensurate with its high agricultural character and interests. The following resolution has recently passed the Legislature :

“That a board of eight commissioners, (one from each judicial district,) be appointed by the Governor, whose duty it shall be to meet at the city of Albany to mature a plan for the Establishment of an Agricultural and Experimental Farm, and prepare a statement of the probable expense of such an institute, and a detailed account of the course of studies and plan of operations recommended, to be delivered to the Governor on or before the first day of September next, to be by him submitted to the Legislature at its next session.”

WASHING, SHEARING, AND PREPARING WOOL FOR MARKET.

We copy the following article, which we have no doubt will be of service to many of our readers, from a new agricultural periodical, “*The Wool Grower*,” published monthly, at Buffalo, N. Y., and edited by T. C. Peters. As its title denotes, sheep husbandry and the management of wool, will receive special attention in its pages, but not

to the exclusion of the other departments of agriculture, or even of gardening. We wish the enterprising editor every success:

WASHINGTON.—This is usually done at the north, about the first of June. The climate of the Southern States would admit of its being done earlier. The rule should be, to wait until the water has acquired sufficient warmth for bathing, and until cold rains and storms, and cold nights, are no longer to be expected.

Sheep are usually washed by our best flock-masters, in vats. A small stream is dammed up, and the water taken from it in an aqueduct (formed by nailing boards together,) and carried until sufficient fall is obtained to have it pour down a couple of feet or more, into the vat. The body of water, to do the work fast and well, should be considerable—say 24 inches wide, and five or six deep—and the swifter the current the better. The vat should be, say 3½ feet deep, and large enough for four sheep to swim in it. A yard is built near the vat, and a platform from the gate of the yard, extends to and encircles the vat on three sides. This keeps the washer from standing in the water, and makes it much easier to lift the sheep in and out. The yard should be large enough to hold the whole flock, if it does not exceed 200; and the bottom of it, as well as of a smaller yard, unless well sodded over, should be covered with coarse gravel, to avoid becoming muddy. If the same establishment is used by a number of flock-masters, graveling will be always necessary. As soon as the flock are confined in yard, the lambs are all immediately caught out from among them, and set over the fence into a yard. This is to prevent their being trampled down, as it often happens, by the old sheep, or straying off, if let loose. A boy stands by the gate next to the vat, to open and shut it, (or the gate is drawn shut with a chain and weight) and two men, catching the sheep, as directed under the head of tagging, commence placing them in the water for the preparatory process of ‘wetting.’ As soon as the water strikes through the wool, which occupies but an instant, the sheep is lifted out and let loose. The vat should, of course, be in an enclosed field, to prevent their escape. The whole flock should thus be passed over, and again driven round, where they should stand, say an hour, before washing commences. There is a large per centage of potash in the wool oil, which acts upon the dirt, independently of the favorable effect which would result from thus soaking it for some time, with water alone. If washed soon after a good shower, previous wetting might be dispensed with; and it is not *absolutely necessary*, perhaps in any case. If the water is warm enough to keep the sheep in it for the requisite period, they may be got clean by washing, without any previous wetting, though the snowy whiteness of the fleece, which *tells* so on the purchaser, is not so often nor so perfectly attained in the latter way.—Little time is saved by omitting ‘wetting,’ as it takes proportionably longer to wash, and it is not so well for the sheep to be kept such a length of time in the water at once.

When the washing commences, two and sometimes four sheep are plunged into the vat. When four are put in, two soak while two are washed. But this should not be done, unless the water is very warm, and the washers are uncommonly quick and expert. On the whole, it is rather an objectionable practice, for few animals suffer so much from the effects of a chill, as sheep. If they have been previously wetted, it is wholly unnecessary. When the sheep are in the water, the two washers commence kneading the wool with their hands, about the breech, belly, &c., (the dirtier parts,) and they then continue to turn the sheep, so that the descending current of water can strike into all parts of the fleece. As soon as the sheep are clean, which may be

known by the water running entirely clear, each washer seizes his own by the fore parts, plunges it deep in the vat, and taking advantage of the rebound, lifts it out, setting it gently down on its breech, on the platform. He then, if the sheep is old or weak, (and it is well in all cases,) presses out some of the water from the wool, and after submitting the sheep to a process, presently to be adverted to, lets it go. There should be no mud about the vat, the earth not covered with sod being graveled. Sheep should be kept on clean pastures, from washing to shearing—not where they can come in contact with the ground, burnt logs, &c.—and they should not be driven over dusty roads.

The washers should be *strong and careful* men, and protected as they are, from anything but the water running over the sides of the vat, they can labor several hours without inconvenience, and without drinking whiskey until they cease to know whether a sheep is well washed or well treated, as was the bad old fashion. Two hundred sheep will employ two expert men not over half a day, and I have known this rate much exceeded.

It is a great object, not only as a matter of propriety and honesty, but even as a matter of profit, to get the wool clean, and of a snowy whiteness. It will always sell for more than enough extra, in this condition, to offset against the increased labor and the diminution in weight.

SHEARING—Is always done in this country on the threshing-floors of our barns, sometimes on low platforms, but more commonly on the floor itself. The 'bay' is divided by a temporary fence, one part being used for the yarding of the sheep, and the other for doing up the wool, &c. The inclosure should communicate by a door, with another and larger yard outside of the barn. Both of these should be well littered down with straw, and fresh straw thrown on occasionally, to keep the sheep clean while shearing. No chaff, or other substances which will stick in the wool, should be used for this purpose. When the dew has dried off from the sheep, on the morning chosen for shearing, a portion of the flock sufficient to last the shearers half a day, is driven into the outside yard, and a convenient number into the bay. An assistant catches the sheep, lifts them off from the floor, as already directed, and delivers them at the door, through the 'breastwork,' to each shearer. The shearer, before taking the sheep, picks off any loose straws sticking to its wool, and if dung adheres to any of the feet, brushes it off with a little besom formed of twigs, hung up near the door, for that purpose. The shearer then takes the sheep to his stand, and commences shearing.

The floor or tables used for shearing, should be planed or worn perfectly smooth, so that they will not hold dirt or catch the wool. They all should be thoroughly cleaned, and, if necessary, washed, preparatory to shearing. It is the catcher's business to keep the floor constantly swept, dung removed, &c. Having a *new* stand or place swept for the shearer who has finished his sheep, he catches him another, and then clears up the stand previously occupied. He first lifts the fleece, gathers it up so that it shall not be torn or drawn asunder, and turning his arms so as to invert it, (*i. e.* bring the roots of the wool downward,) deposits it on the *fold-ing-table*. He then picks up the 'frib's' (small, loose locks) left on the floor, which are deposited in a basket or on a corner of the table. Lastly, he sweeps the spot clean, to be again occupied by the shearer. An active fellow will tend four shearers, and do up the fleeces.—But he should not be hurried too much, or he cannot give sufficient time to doing up. A small boy or two, are handy to pick up frib's, sweep, &c.

If there are any sheep in the pen, dirty from purging or other causes, they should first be caught out, to prevent them from dirtying the others.

It is difficult, if not impossible, to give intelligible practical instructions, which would guide an entire novice in skillfully shearing a sheep. Practice is requisite. The following directions from the American Shepherd,* are correct, and are as plain perhaps, as they can be made:

"The shearer may place the sheep on that part of the floor assigned to him, resting on its rump, and himself in a posture with one (his right) knee on a cushion, and the back of the animal resting against his left thigh.—He grasps the shears about half-way from the point to the bow, resting his thumb along the blade, which affords him better command of the points. He may then commence cutting the wool at the brisket, and proceeding downward, all upon the sides of the belly, to the extremity of the ribs, the external sides of, both thighs to the edges of the flanks; then back to the brisket, and thence upward, shearing the wool from the breast, front, and both sides of the neck—but not yet the back of it—and also the poll or fore part, and top of the head. Now the 'jacket is opened' of the sheep, and its position and that of the shearer, is changed, by being turned flat upon its side, one knee of the shearer resting on the cushion, and the other gently pressing the fore quarter of the animal, to prevent any struggling. He then resumes cutting upon the flank and rump, and thence onward to the head. Thus one side is complete. The sheep is then turned on to the other side, in doing which, great care is requisite to prevent the fleece from being torn, and the shearer acts as upon the other, which finishes. He must then take his sheep near to the door, through which it is to pass out, and neatly trim the legs, and leave not a solitary lock anywhere, as a harbour for ticks. It is absolutely necessary for him to remove from his stand, to trim, otherwise the useless stuff from the legs becomes intermingled with the fleece-wool. In the use of the shears, let the blades be laid as flat to the skin as possible, not lower the points too much, nor cut more than from one to two inches at a clip, frequently not so much, depending on the part and compactness of the wool."

In addition to the above, I would remark that the wool should be cut off as close as conveniently practicable, and even. It *may* be cut *too close*, so that the sheep can scarcely avoid 'sun-scald,' but this is very unusual. If the wool is left ridgy and uneven, it betrays that want of workmanship which is so distasteful to every good farmer.† Great care should be taken, not to cut the wool twice in two, as inexperienced shearers are apt to do. It is a great damage to the wool. It is done by cutting too far from the point of the shears, and suffering the points to get too elevated. Every time the shears are pushed forward, the wool before cut off by the points, say a quarter or three-eighths of an inch from the hide, is again severed. To keep the fleece entire, so important to its good appearance when done up, (and therefore to its saleableness,) it is very essential that the sheep be held easily *for itself*, so that it will not struggle violently. To hold it still by main strength, no man can do, and shear it well. The posture of the shearer should be such, that the sheep is actually confined to its position, so that it is unable to start up suddenly and tear its fleece, but it should not be confined there by severe pressure or force, or it will be constantly kicking and struggling. Heavy-handed, careless men, therefore, always complain of getting the most troublesome sheep. The neck, for example, may be confined to the floor, by placing it between the toe and the knee of the leg, on

* Pages 179, 180.

† I hold that a man is not *half* a farmer, who has not a dash of the æsthetic mixed up with his utilitarianism. Profit should not often be sacrificed to appearances, but where they are strictly compatible, he who disregards the latter, betrays a sordid and uncultivated mind.

which the shearer kneels, but the lazy or brutal shearer who lets his leg rest directly on the neck, soon provokes that struggle which the animal is obliged to make to free itself from severe pain, and even, perhaps, to draw its breath!

Good shearers will shear on the average, twenty-five merinos per day, and a new beginner should not attempt to exceed from one-third to one-half that number. It is the last process in the world which should be hurried, as the shearer will soon leave more than enough wool on his sheep to pay for his day's wages.

It has been mentioned that but enough sheep should be yarded at once, for half a day's shearing. The reason for this is, that they shear much more easily, and there is less liability of cutting the skin, when they are distended with food, than when their bellies become flabby and collapsed for the want of it. This precaution, however, is often necessarily omitted in showery weather. It is very convenient to have the outside pen which communicates with the 'bay,' covered. On my farm, it is one of the regular sheep-houses. If it is showery over night, or showers come up on the day of shearing, a couple of hundred sheep may be run in and kept dry. And they can be let out to feed occasionally during the day, on short grass. If let out in long, wet grass, their bellies will become wetted. Wool ought not to be sheared, and *must* not be done up, with any water in it.

SACKING WOOL.—When the wool is sold, or when it must be sent away to find a market, it is put up in bales nine feet long, formed of 40-inch 'burlaps.' The mouth of the sack is sowed with twine, round a strong hoop, (riveted together with iron, and kept for the purpose,) and the body of it is let down through a circular aperture in the floor of the wool-room.* The hoop rests on the edge of the aperture, and the sack swings clear of the floor beneath. A man enters the sack, and another passes the fleeces down to him. After covering the bottom with a layer, he places a fleece in the center and forces down others around it, and so on to the top, which is then sowed up. Each fleece should be placed regularly with the hands, and then stamped down as compactly as possible, so that the bale when completed, shall be hard and well filled in every part. The bulk of a given weight of wool will be greatly affected by the care with which this process is performed.

Those who do not expect buyers to come and look at their wool, sack it immediately after shearing. A temporary scaffolding is erected near the wool, as deposited by the tyer, and one man tosses up fleeces to a second, who catches them and passes them down to the man in the sack. A light frame, to suspend the sack, and *part way up it*, a standing-place for the catcher, would be a convenient appendage to the establishment of a wool-room. With a set of stairs up to his midway standing-place, an active fellow would keep the treader supplied, without any assistance.

DRINK FOR A COW AFTER CALVING.

RECIPE

For a draught given to a cow that was so weak as not to be able to stand, after having had two calves this spring.

Tea made from one handful of mint, put into three pints of boiling water.

Two glasses of brandy, and one piece of butter the size of an egg.

Mixed, and given warm from a bottle.

Proved to be good, as the cow is perfectly recovered.

May, 1849.

Communicated.

* It is to secure this convenience, that the wool-room is best placed on the second floor.

PROVINCIAL ASSOCIATION.

President's Address to the Agricultural Societies, Farmers, and other friends of Agriculture, throughout Upper Canada.

GENTLEMEN,—It is my duty, as President for the present year, to address you upon the subject of the state and prospects of the Agricultural Association of Upper Canada. You are aware that the Provincial Exhibitions have been held at Toronto, Hamilton, and Cobourg. The next one is appointed to be held at Kingston, during the third week in September next, provided the necessary funds can be obtained. Before I ask you again, however, to step forward with your accustomed liberality, it is right that you should have a statement of the financial matters of last year.

The sum received from the several District, County and Township Societies, and from individual subscriptions, was £745 19s. 4d., and from all other sources £409 11s. 5½d., making in all £1055 10s. 9½d. The sum total of our expenditure was £981 8s. 6½d.; leaving a surplus of £74 2s. 3d., which was paid over to the Treasurer of the Association at Toronto. To carry out the exhibition this year, it is estimated that at least twelve hundred pounds will be required from all sources. Two gentlemen have been appointed by the executive committee at Kingston, to call upon the several Agricultural Societies throughout the Province, as well as upon individuals; and it is for you, Gentlemen, to consider whether that call shall be liberally responded to, or otherwise. It is for you to reflect upon the consequences which must result to the great interest involved, as well to you as to the province at large, from the annihilation of the association—which must be the result of a lack of funds to meet our engagements. Hitherto, by your liberality, all the liabilities of the Association have been promptly met, except those contracted at the Exhibition in Hamilton, and which, it is hoped, will soon be discharged; leaving the Institution free from incumbrance.

I notice the newspaper report that the Legislature has granted us £250 for this year's operations, for the purpose of expressing my fears that there is no good foundation for believing that such grant will be made during this Session. (See Editor's remarks, p. 168.)

In the consideration which you will be called upon to give to the subject, it must be borne in mind, that you receive five thousand pounds from the public funds annually; and that it has been urged by some influential parties in the Legislature, that one thousand pounds of this money should be taken out of the present grant, and given for the support of the Provincial Association alone. In this view of the matter, I, for one, cannot nor shall I, concur, as long as the various Agricultural Societies continue the support which they have hitherto afforded. This arrangement would, of course, enforce the burthen upon all *equally*, but, on the other hand, it might produce an estrangement between the general and local societies, which of all other things should be avoided. I could, therefore, regard it as an alternative only to the total extinction of the association. It is much more seemly that the members as a body, should be the distributors of the funds necessary for the support of what is emphatically *their own association*. The Earl of Elgin will be invited, and if the public business will permit, we shall be honoured with his company.

Our exhibition takes place one week after that of the State of New York, which is to be held at Syracuse, at which place *Professor Johnson*, one of the most eminent agriculturists in Great Britain, is expected, and I cannot doubt if such be the case, that he will honour us with a visit. I think it probable, too, that the committee will publish a separate premium list for the competition of

foreigners*. This will, of course, attract a great number of visitors, and a vast number of Manufacturers from the State of New York; and, taking it altogether, one of the most interesting meetings which Canada has ever seen may be expected at Kingston on the third week in September. From the short experience which we have already had—at the very beginning of our organization I may say—of the benefits derived from our Provincial Exhibitions—it is hardly necessary for me to urge its claim for support by arguments however cogent. No man who really reflects, and can see in what the true interests of the country consists, will, for one moment, hesitate to declare, the advancement of agriculture to be the very foundation upon which rests our whole prosperity. Nor is it farmers alone whose interests are affected—the professional man, the merchant, the manufacturer, the tradesman, and the common laborer—all are equally concerned in its promotion, and all will become prosperous, or otherwise, exactly in proportion to the fluctuation attending the progress of Agriculture.

I have the honour to be,

Gentlemen,

Your obedient servant,

H. RUTTAN.

Cobourg, 8th May, 1849.

POTATOE DISEASE—HOW REMEDIED.

The researches of intelligent and scientific men have been attended apparently with no success in their indefatigable pursuit for the causes of the potatoe rot. It is no part of our intention to examine the question at this time, but simply to make two or three of the most obvious and practical suggestions.

That the recent prevalent and fatal disease is the result of long-continued, artificial cultivation, cannot admit of doubt. That it has been, and still is, induced or augmented by the use of putrescent or barnyard manures, is in the highest degree probable. When the potatoe, like any other vegetable, is in a healthy condition, and sustaining a vigorous growth, there is no danger of disease, from the presence of putrescent manures. But when the seed lies dormant in the earth before vegetation has commenced, and especially when the freshly-cut, moist, absorbent vessels are lying in immediate contact with the putrid, decomposing manure, there may, and under many circumstances, must be injury to the fourth-coming plant; and again, when, from any cause, the progress of vegetation is arrested in the summer, or when growth has ceased in the autumn, the presence of these decomposing vegetable and animal matters may prejudicially affect these fleshy, sensitive tubers. The combined effects of this cause through successive ages of cultivation, have doubtless produced the present tendency to disease. Some atmospheric or other causes, which, under other circumstances would have been perfectly harmless, have kindled contagion in this susceptible mass, and sent destruction over every region where the plant is cultivated. Had it been in a healthy, vigorous condition, the cause which now produces decay might have fallen innocuous upon our fields; or like the cold blast, which fastens a rapidly-wasting disease upon the consumptive man, it would serve only to freshen and invigorate a sound constitution. We believe there is a weakness or want of stamina in the whole potatoe race, and that there is no empiricism, no quick medicaments, which, acting like a vomit or cathartic on the human frame, will purge the vegetable system of what has become a hereditary tendency to disease.

The cure for this must be gradual. Gentle tonics must be administered to the enfeebled plant, till it regains its former hardness and strength. These, we think, must be found principally in fresh, rich turf, or sod, (old meadows or pastures,) and in the exclusive use of saline manures. Keep from the potatoe field every particle of putrescent—organic manure—whatever has once been a portion of vegetable or animal, and which is now passing with more or less rapidity to decay, and which may possibly excite a corresponding sympathy from the sickly plant, and induce that, too, to join it in its rapid career of dissolution. Instead of these, use conservative manures, antiseptics, a part of whose nature it is to arrest decay or putrefaction. Salt, ashes from either coal or wood, lime, plaster, potash, bone dust, (which, if deprived of its animal matter by calcination, is nothing but a mineral salt,) old bricks and mortar, burnt clay, charcoal from peat or wood, marl or green sand may be used, either singly or in judicious combination, as the wants of the soil may require.

Let our farmers use good, uncut sound seed, properly harvested and preserved, (of which more hereafter,) in wide drills, on land ploughed deep and used for this purpose as seldom as possible; and make a proper application of some or all of the above-named manures, and especially of fresh lime, and we are morally certain of a mitigation of the potatoe rot, and probably, if the plan were universally pursued, of its final extinction. We hope that careful experiments will be made the coming season, by intelligent, observing farmers, and that they will hereafter communicate the results to the agricultural public. Perhaps some enterprising farmer may find it not only for the public interest but his own, to devote his fields to the rearing of the potatoe exclusively for seed; and that those who prefer to secure a large crop by the use of fermenting manures, may sell or consume their entire crop, and thus avoid perpetuating decay, while they could secure a comparatively healthy seed for re-planting, from these carefully cultivated fields.—*American Agriculturist.*

THE COW—HER DISEASES AND MANAGEMENT.

Milk Fever.—This is one of the most dangerous diseases to which the cow is heir to, and unless timely relieved, very soon proves fatal. It is caused by whatever obstructs perspiration, and accumulates the blood internally; hence, it may be produced by the application of cold air, by lying on the cold ground, or by giving cold water immediately after calving; and these causes will naturally produce this effect, from the open state of the pores at this time, and from the external parts being so wide and relaxed after that operation. Cows in high condition are more subject to this complaint than others, especially if they have been kept up for some weeks before calving.

The symptoms begin to show themselves the first, second, or third day after calving, but most frequently the first day, and that often as early as two hours after the delivery. They may be known by the cow shifting about from place to place; she frequently lifts up her legs and then sets them down again; discovers a wild appearance in her eyes, and sometimes blares, as if wanting her calf. At this time, she is very ready, on a person going up to her, to give him a poke. As the disease progresses, there ensues a quick motion in the flank, and if confined in a stall, she begins to stagger from side to side, with open mouth, from which issues a clear water, and her tongue, at this time, is thrust out a considerable length. After staggering some little time, she falls down, but recovers herself again, and continues to do so until she is no longer able to get up, and seems entirely to lose the use of her limbs. She then throws herself on her side, with her head inclined to her fore ribs. The

* I must not be understood to mean that foreigners are to compete with us; competition will be altogether amongst themselves.

body, at this period, sometimes begin to swell; and when the malady is still further advanced, the extremities, and the roots of the horns and ears feel cold, the latter being covered with a clammy sweat. What passes through the animal is black and dry; she frequently strikes with her fore and hind legs; her eyes appear dull and heavy; and her breath emits a faint and sickly smell. Her restlessness gradually increases; she is covered with cold sweat; her extremities are seized with a shivering; the pulse becomes irregular, and death terminates the scene.

If the cow be in very high condition, she should first be bled, to the quantity of two to three quarts, if she can bear it, and the following mixture given as soon after as possible, at one dose, in three quarts of gruel in which two ounces of soap have previously been dissolved:—

Epsom salts, $\frac{1}{2}$ lbs.; althæa ointment, 3 oz.; saltpetre, $\frac{3}{4}$ oz.; powdered fenugreek, $\frac{1}{4}$ oz.; powdered mustard seed, $\frac{1}{4}$ oz.

As soon as this medicine is given, the cow should be “raked,” (the removal of the dung from the rectum,) and the following glyster administered in two quarts of water gruel:—

Common soap, 1 oz.; common salt, a handful; sweet oil, $\frac{1}{2}$ pint.

The soap being first dissolved in the gruel, mix the whole together, and inject, with a common glyster pipe and bag, into the rectum. As soon as the drink and glyster are given, the animal, if she lies on her side, must be turned on her belly, and well bolstered up with straw, to prevent her from getting into her former situation; for, by laying in that position, the swelling of the body will increase, nor will the medicine operate so soon as when resting on her belly; neither in this posture should she lie too long, but be turned over occasionally, to prevent her limbs getting cramped. This change of position will also assist in expelling the wind, as well as in promoting the operation of the medicine. It will likewise be useful to rub the limbs and body two or three times a day.

Whatever else is given the animal in this disease, should be administered with caution; for she swallows with some difficulty, and is in danger of being choked; in consequence of which, there should be a proper interval between each hornful of medicine. In six or eight hours after taking the above, the following dose may be repeated every six hours until a change for the better takes place, to be given in a quart of ale or strong beer, with a little allspice:—

Gum myrrh, $\frac{3}{4}$ oz.; powdered valerian, $\frac{3}{4}$ oz.; assafetida, 3 drachms; saffron, 3 drachms; camphor, $\frac{3}{4}$ drachm; opium, $\frac{3}{4}$ drachm; mustard seed, $\frac{3}{4}$ oz.; saltpetre, $\frac{3}{4}$ oz.

When the disease is turned, and the cow begins to eat and drink a little, which is always a sure sign of her recovery, and generally occurs twenty-four hours after the attack, (if she survives at all,) and sometimes sooner, the following medicine may be given, at one dose, in a pint of mild ale, or in a strong decoction of camomile tea, to be repeated once or twice a-day, if necessary, till she recovers:—

Camphor, $\frac{3}{4}$ drachm; saffron, 3 drachms; saltpetre, 3 drachms; gentian, $\frac{3}{4}$ oz.; valerian, $\frac{3}{4}$ oz.; Jesuits' bark, $\frac{3}{4}$ oz.

After two or three doses have been administered, if the animal mends very fast in her appetite and strength, one every other day may be sufficient. Should great debility ensue after the fever has disappeared, which is sometimes the case, an ounce of isinglass, boiled in skim milk, may be given once or twice a-day, which will also be found extremely useful in assisting to strengthen the relaxed system.

If, however, after forty-eight hours, the cow should still be incapable of getting up, although her appetite may be good, and she appears lively, the following

“charge” should be laid on her loins, as the weakness exists more in those parts than in any other; for she can generally raise herself on her fore legs, while her hinder parts seem useless:—

Take black and Burgundy pitch, $\frac{1}{2}$ lb. each; oxycroceum and Paracelsus plasters, 2 oz. each; bole Armenian and dragon's blood, 1 oz. each.

To be melted over a slow fire. This charge should be spread while hot, but not so hot as to scald, all over the loins and rump. Some saddler's stuffing or wool should be stuck on it, to keep it in its place. As soon as this is completed, the cow must be got up, and put into a sling, made of sacking and ropes, so that she can feel the floor with her legs, which are to be well rubbed two or three times a-day. In this situation, she must remain until she can stand of herself, and get up without the aid of the sling, which will generally be the case in two or three days.

Should the cow remain costive, from the continuance of the fever, which is sometimes the case, for several days, doses of one half of the preceding purgative may be repeated at proper intervals, until a passage is procured. Moderate bleeding and purging, before calving, with suitable food, will generally prevent this disease. But when this has been done, and the complaint comes on, the subsequent quantity of blood to be drawn, and the doses of medicine given, must be correspondingly diminished.

During the continuance of the fever, the cow requires little or no food; but if any is given her, it should consist of warm water or water gruel, a hornful of which may be occasionally administered, if she will not drink it of her own accord; and whenever she seems inclined to eat, bran, Indian meal, and malt mash are most proper, with now and then a little sweet clover or other hay, laid before her in small quantities at a time, which should be gradually increased till she can eat her usual allowance, and her stomach is capable of bearing it. But over-loading the stomach should at all times be avoided, as disagreeable consequences are liable to ensue therefrom.—*American Agriculturist*.

MOSES ON MEADOWS.

Mosses on meadows, like vermin on cattle, are a consequence rather than a cause of evil. They indicate a deficiency of stamina, health, or condition in the field or animal, rather than induce it themselves. But where either exist, they show something radically deficient, which must first be remedied before any useful results can follow. A farmer might as well leave his money with sharpers, or his manure heap under a spout, as his meadows in moss, or his cattle covered with vermin. All are spendthrifts together; and if left to themselves, will, like Pharaoh's lean kine, soon consume his evidences of previous plenty and show no equivalents in return. But how are we to get rid of mosses in meadows? Let us first see how they get there. The surest way to get rich, is first to know how you became poor.

Mosses are generally the result of a feeble growth of the grasses on a moist surface. The moisture of the land is not of itself objectionable, but decidedly the reverse; but when the profitable occupants of the soil fail or become thin and meagre, the profitless are ever ready to come in and supply their places. This is the case with the mosses; and it is not till the cultivated plants have declined, that these have gathered strength. To remove the latter, the former should be put in the very best condition. Scarifying, harrowing, closely feeding, and treading them thoroughly by the sharp hoofs of sheep and cattle, are all useful in extirpating the mosses from meadows. Sowing strong quick lime over them, when recently mown, or after short cropping by

animals, is attended with decided advantage. Ashes will sometimes produce a similar effect. Guano, when mixed with mould and sown broadcast, is exceedingly useful; and so, too, are compost manures of all kinds. These help to destroy the mosses, by invigorating the grasses. Properly draining, and especially *thorough under draining* the lands, is one of the most efficient modes of removing mosses and worthless aquatic plants. By carrying off all surplus, and particularly stagnant waters, the atmosphere and heat penetrate the soil and induce a vigorous, healthy growth of the cultivated plants, and thereby withdraw so much of the space and food which otherwise would be monopolized by the intruders.

When these and some other, of the most obvious means of renovating meadows fail, there is no alternative, but to break up the sod and subject the field to another course of cultivation. It is not absolutely necessary that this undergo a series of rotations, although for many reasons this is better; yet a rotation may be secured exclusively with the forage plants, the clovers, and numerous varieties of the grasses. The meadow may, if it be preferred, be thoroughly manured with unfermented dung, then turned over flat, and after applying a top dressing of compost, may be harrowed lengthwise of the furrows, and sown with grass seed liberally; and if all has been properly managed, the mosses will not, for years again, infest your meadows.—*American Agriculturist.*

LIQUID MANURE.

To the Editors of the Agriculturist.

GENTLEMEN,—Having frequently noticed in meadows that have been pastured in spring small tufts of grass growing higher, denser, and more luxuriant than the rest, I have been led to examine them, thinking they might be caused by the dung of cattle; however, upon examination, not finding any, I sagely concluded this might have been occasioned by the urine. Whereupon the following hint was suggested to my mind, viz.: that as most farmers have generally some hollow, in or near their barn yards, into which the urine of the cattle and other liquid manure runs, they would do well to form a tank in which to collect it. And by placing a strong tight box on the hinder part of a roller extending its whole length, and of sufficient breadth and depth as will make a good load, the box to be pierced with holes in the side near the bottom, and fitted with a sliding board so as to stop the holes while the box is filling; they may avail themselves of a valuable manure. The water may be taken from the tank to the field in a puncheon, placed in a cart, to have a stop cock near the bottom, with a little spout to convey the water into the box.

Wishing your paper the success it merits,

I am, Gentlemen,

Your humble Servant,

AN EARTH-WORM.

Vaughan, May, 1849.

P.S.—If you will give me a few hints concerning the best mode of rearing and managing colts, you will do me (and perhaps the rest of your readers,) a favour.

VIRTUES OF HEMP.—By its cordage, ships are guided, bells are rung, beds are corded, and rogues kept in awe.—*Cowles.*

HINTS ON THE MANAGEMENT OF HORSES.—The horse is the noblest of our domesticated quadrupeds. He is also one of the most useful in augmenting the power and diminishing the labour of mankind. He touches the extremes of beauty and deformity, and is associated with every degree of pride and degradation, of utility and injury to the human race. He may be refined by breeding, or debased by inhumanity and neglect. He is applied to the economical purposes of the farmer or citizen, or made the shuttlecock of gamblers and the *fancy*, by being thrown between the winning posts of the race course within the shortest possible time; or he becomes the terrible engine of destruction as he sweeps over the plain in a terrific charge of cavalry.

With us, however, in this portion of America, the horse is generally either the useful drudge and co-laborer of our citizens, or he is made to contribute to the ease, the pleasure, and the luxury of those who can afford it. Reasonable common-sense purposes among an intelligent common-sense people have produced such results as were to have been anticipated. The northeastern states can safely challenge the world to produce an equal proportion of horses every way adapted to the objects sought, as may now be found among them. This great excellence of our horses, has been mainly achieved within the last fifty years, by judiciously crossing the best made and stoutest bloods upon a substantial, but originally not over meritorious stock of brood mares. We have, besides, imported some of the best of other well-established breeds. Such are the Norman, the English cart horse, and Cleveland bay. We have occasionally brought choice animals from different quarters of the world; and where they have been found possessing superior merit, they have been made to contribute their quota in raising the character of American horses. We have within the last few days seen a Barb stallion, recently sent to this country, by our late consul at Morocco, standing nearly 16 hands high, with compact form, well-knit sinews, flat, clean, wiry, but strong legs, a shoulder approximating so closely to the hip as to be almost coupled by a double hand's breadth, yet with a steep Norman rump; and though probably incapable of ever getting a race of winners on the course, yet possessing qualities of intrinsic value for the horse of all work. But it is not our purpose to dwell upon the merits of our horses, but to suggest some of the most obvious hints for their management.

One great cause of injury to horses is, overworking at too early an age, before the frame is expanded and muscles and cords have become fully developed and perfected. A horse does not reach a full maturity till eight, nor a man till eighteen to twenty-four; and while the boy is generally exonerated from hard, constant labour till he reaches his majority, how often do we see the colt of three or four, delving daily at a load that would tax the powers of the thoroughly-developed horse. Whoever thus overtaxes the youth of the animal, may be sure that he is paying dearly for it in his maturer age. He may waste one end of life, but he cannot both; and for every year thus inhumanly filched from one extremity of horse existence, he is exhausting two if not three, and often times four of what should be his prime. But this folly is getting out of vogue, and is practised only by such as combine the double traits of idleness and inhumanity.

Another cause of frequent injury to horses, is from improper breaking or training, by which the animal is left ignorant of the best and easiest method of doing his work. A horse should be well taught his paces; to walk fast, which is his easiest and least expensive gait; to trot square and light, yet firmly; to gallop easily, if destined for the saddle, and to back well, if used for the wheel. Most of the character and ability for a desirable gait is inbred, and is controlled by the form; yet a

great deal depends upon the skill and habit of the animal. We see this in every department of human labor, sometimes carried to an almost incredible extent, as shown by the porters in the Mediterranean and East Indies, who will habitually carry burdens of 300 to 400 lbs., and sometimes it is alleged as much as 600 to 700. The well-broken New-England oxen, will, with apparent ease, back a loaded cart up a steep hill, which many indifferently trained would hardly draw in the same position.

Long-continued labor is injurious to the horse, though it may be indulged in, occasionally, with impunity. A horse should not be kept dragging from morning till night, with an incessant jog, however slow that may be. He should be put to his work, early or late as you please, and when there, let him move briskly, with an interval of rest now and then, to relieve the muscles and take breath, till his work is accomplished preparatory to lunch; or if his day's work is for four or five hours only, he may do it all with more comfort and advantage to himself without, than with food. A tolerably quick step and activity while out, is better for the animal than delving all day at a snail's pace.

When put up for the night, the horse should be thoroughly rubbed down, the dirt brushed from his legs, and his hoofs cleaned out. Many are in the habit of washing the legs with cold water while the animal is warm, and afterwards allowing him to stand exposed to the cold air. Nothing could be more injurious. If the weather or stable be warm, and the water not too cold, this may be done with impunity, or may be done at any time, if the limbs exposed to the water are constantly rubbed till dry. Let grooms use common sense in this, and a small amount of it will convince them of what is proper. Whatever would injure a man, will injure a horse under similar circumstances, though in a less degree. It is certainly very grateful to the tired beast to have his limbs gently rubbed after a hard day's work; but if this cannot be done properly with water, then remove the dirt with the brush, the curry-comb, or by the hand. The hoofs should also be carefully cleaned; and if he has been driven hard over a pavement or M^r. Adam road, they should be well stuffed for the night with fresh cowdung and clay. This will give a requisite degree of pliability and elasticity to the hoof, and remove any tendency to soreness, feverishness, or foot cracks.

Frequent injury is done to horses by allowing them to stand, after exercising, in a cold air, or exposed to a draught. Consider how the man would fare in his shirt sleeves, in the open air of January, after having induced a profuse perspiration by exercise. Just so will it be with the horse. A cold, cough, catarrh, and what not, is very likely to follow this wanton exposure. Always have an ample thick blanket to throw over the horse when thus exposed; nor should he, especially, ever be lashed into a sweat in cold weather, unless brought directly into a stable to cool off. It is better to rub him thoroughly till dry; but where this cannot be done, and the weather is cool, blanket or house him till all moisture is removed. Never wash the animal, nor drive him through the water, unless under such circumstances of weather, or subsequent care, as would secure yourself against injury.—*American Agriculturist*.

APPLICATION OF PLASTER AND ASHES TO MEADOWS.—If a meadow be manured only with plaster of Paris, the crops of grass will be at first greatly increased, but will afterwards diminish; for the silicate of potash which the soil contained, is soon exhausted by the rapid growth of the grass, and its further increase is checked. But if the meadow be strewed from time to time with wood ashes, which contain potash, the grass will thrive as luxuriantly as before.

SPECIAL MANURES FOR RUTA-BAGA TURNIPS.—The result of the application of artificial manures in increasing the average produce of ground, cannot but be interesting to the agricultural community, even though these experiments should not have been conducted on American soil; and as every successful result leads to the extended use of special manures, and in most cases, to more economical farming, I submit the following instance of what has been accomplished in raising turnips by their means.

Having been applied to in the spring of 1844 by the steward of Lord Charlemont, to analyze a sample of soil from the estate lying two miles from Dublin, and to point out how the soil might be improved as to grow Swedish (ruta-baga,) turnips for a prize crop, I found, after examination, that the soil was in good condition, having been manured the summer previous, but that it was to a small extent destitute of potash salts and phosphate of lime, to the degree that a heavy crop would require to find readily in the soil. On this account the following manure was recommended:

56 lbs. pearl ashes,
28 lbs. nitrate of soda,
14 lbs. coarse Epsom salts,
56 lbs. bone dust.

To be mixed in with ditch scourings, road sweepings, some burnt earth, and other refuse off the farm, so as to make the compost sufficiently bulky; the whole to be laid on a statute acre.

The object in using nitrate of soda was two-fold; first, it supplied the small quantity of soda found in turnip ash (10 lbs. in every 20 tons), and then, the form in which it is added, containing, as it does, nitrogen, (nitric acid,) rendered it peculiarly serviceable in pushing on the early growth of the turnip. The bone dust and pearl ash were supplied because the crop requires them; and the Epsom salts, because it was desired to put in wheat immediately after in the soil.

The result of this manure more than equalled expectation; their size was superior to any exhibited, and they received the first prize from the Royal Agricultural Society of Ireland, as well on that account as for the total yield amounting to 56 tons the English acre.

The above-named manure cost about \$6 per acre; and whether we consider it in the way of economy, or of an addition having a wonderful effect in stimulating vegetation, it recommends itself strongly to notice. The wheat crop following was one-third greater yield than usual, or more than a portion of the ground unmanured did yield. As this compost was applied to a soil in rather a good state, with the object of forcing a great growth, there is no reason why the same special manure might not be applied to all soils intended for Swedes, and where condition is not exhausted by neglect of manure.

THOMAS ANTISELL.

Laboratory of the Amer. Agricultural
Association, March 7th, 1849.

American Agriculturist.

KARKEEK ON CATTLE BREEDING, &c.—At a late meeting of the Probus Farmers' Club, Mr. Karkeek, after some statistics on the quantity of cattle bred in the kingdom, proceeded to argue that it was not so much the quantity or quality of food which caused an animal to attain a heavy weight in a short period, as the peculiar disposition, derived from inherited and transmissible tendencies, to acquire flesh and fat, and come early to maturity. He reprobated the system of breeding from cross-bred animals, and recommended in all cases where a cross was attempted, that pure blood be had on one side. "Breeding in the line" he considered the safest way; that is, by first selecting the best of

that particular breed, both males and females, which it is intended to propagate from, and maintaining the same (changing occasionally from one family to the other) in the greatest purity. He considered that the size and general appearance of a bull was not of so much importance as the general size of the family to which he belonged; and also, as it respected cows, that more perfect animals were produced by breeding from those of a small size, than when they exceeded the ordinary size of the race to which they belonged. In the management of the pregnant cow, he recommended that all petted cows, and high-bred ones particularly, when in a high condition, should have a gentle purgative administered some three or four days previously, and repeated, with moderate bleeding, immediately after calving. *This prevented dropping after calving.* Red water, he considered, was frequently caused by turning young stock that have been warmly housed during the winter, into the fields just as the spring sets in. From the hot-house system they have undergone, they are prematurely preparing to put on their summer coats, which were invariably formed at the expense of the constitution; and the exposure of their almost naked backs to cold and wet, at that period, produces frequently constitutional disturbances of the digestive organs; and *red water*, which is primarily a disease of those organs, and not of the kidneys, is the result. Hoove, he considered, also an affection engendered by crowding young cattle together during the winter, and brought into action by exposure to a few cold stormy nights shortly after being turned out. Diseased lungs were also commonly produced by the same cause. He considered it dangerous to breed from a consumptive cow, as it is commonly communicated to the offspring. The heifer of a consumptive cow may rear her first calf, but very rarely a second one. The lecturer then described some of the pestilential low typhoid diseases, such as murrain, pleuro-pneumonia, &c. &c., and said he frequently traced their source to the crowded state of cattle houses, and the exposure of the inmates to dirt, filth, and want of proper ventilation, as well as exposure to damp and cold. He strongly enforced that all stock intended to be depastured the following summer should never be tied up in close ill-ventilated cattle-houses during the winter, but kept in small yards having sheds attached, sufficiently large to accommodate four or five steers, or two or three heifers in calf. Those yards, which are called *hammels* in the south of Scotland, should have a southern aspect, and the floor of the shed should be raised about two feet above the floor of the yard, and well littered to keep the young stock dry and warm. Those yards would be found convenient for many purposes, such as, summer soiling, where it is practised, &c., and he believed that few tenants would refuse paying 5 per cent. on the outlay to his landlord for the accommodation. Respecting *fattening cattle*, he spoke of the new method lately introduced on several estates in this district, by feeding cattle in boxes, as on the estate of Danbuz, of Killiow, Mr. W. Hodge, Callestock Veor, and the Messrs. Davey, Tywarnhayle farm. He described the method of feeding, as adopted by Messrs. Davey, very minutely. The cost of each bullock was about 1s. 5½d. per day on the average. Thus—

2lbs. of linseed, 44s. per qr.	d.
6lbs. of barley meal, or rye, at 3d.	4½
84 lbs. of turnips, at 10s. per ton	4½
14lbs. of hay, at 3s. per cwt.	4½
Attendance and fuel	1½

1s. 5½d.

The chopped hay or straw was first mixed with the meal in a shallow wooden cistern, and was incorporated

with the linseed mucilage in a boiling state. The cattle were fed six times a day—three times with turnips, and three times with the linseed compound; and on this system they were enabled to fatten oxen, averaging 10 cwt., of the very best quality meat, in sixteen weeks. Thus the farmer is enabled to feed three animals instead of one on the old plan, and thereby make a quicker return of his capital, which was the life of trade. The lecturer said that there was good policy in using chaff, of some kind or other, as a vehicle for the linseed mucilage into the stomachs of cattle. If the stomachs of cattle were not moderately filled by a meal, notwithstanding it be a rich and nutritious diet, the muscles, whose exercise tend to produce a healthy digestion, are not called into action by the food being kept in constant motion in the stomach, and indigestion, with all its various train of evils, was the consequence. After this, the lecturer proceeded to point out many diseases in cattle produced by mismanagement in the feeding department, such as *distension of the rumen*, called hoven; also diseases of the third stomach—the *manyplus*—such as *furdel bound*. Speaking of the third stomach, he said there were very few diseases by which cattle were afflicted, in which it is not involved. It was frequently diseased from being overloaded with hard, indigestible food—such as straw-chaff, fibrous turnips; and in most cases of death, which occur from this cause, portions of indigested food have been found in a hard, baked state, between the leaves of the manyplus. Respecting cooking of food for cattle, he shewed, both by the peculiar digestive apparatus of the ox, as well as by the experience of farmers, that steaming of roots, hay and straw, was unnecessary; and he strongly recommended the bruising of grain of every kind. This part of the lecture was confirmed by several experiments, lately conducted, on the feeding properties of grain of different descriptions, given in a whole or bruised state. In regard to rearing cattle, Mr. James thought they subjected themselves to great loss in the early days of rearing calves, which were generally taken from the cows when four, six, or eight days old, and then are put entirely on skim-milk. If they were allowed to remain on the cows eight days, and then had raw milk for the next eight weeks, it would make a very considerable difference in their appearance.—Mr. Kendall said that during the last fourteen or fifteen years he had bought and fed about five hundred bullocks, and had kept them as recommended by Mr. Karkeek, running in rough yards during winter, and let them go in the fields in summer. His object was never to fatten them during the winter, but in summer; and during the last fourteen years he had not lost one out of 500 animals, though he had been obliged to kill two or three. Still, if he had to fatten cattle during winter, he should keep them in the house rather than in the yards. Box-feeding, he believed, was preferable to tying up. He had known cattle that were kept in go back very much when turned out in May, but his bullocks being kept differently were not so affected by the weather; bullocks kept in the house, he thought, should not be turned out in the summer.—Mr. Karkeek considered, that cattle once tied up should remain so till sold to the butcher; and there was no doubt that cattle would fatten better if tied up in the house, or in boxes, than if kept on the hammelling system, because cold, wet, and damp produced hunger. He recommended hammelling for cattle intended to be pastured in the following season, but cattle intended to be fattened should be tied up or put in boxes. In reply to Mr. Downing, Mr. Karkeek said, that turning the cattle out occasionally in winter, when the weather would permit, which was the common practice in this county, was preferable to keeping them always tied up by the head,—but the hammelling system was better.—Mr. Kendall was of the same opinion.—Mr.

W. Tretheway said bullocks should be tied in to eat their turnips, otherwise the master bullock would deprive the others of their portion. The Chairman said he had had a little experience in box-feeding, and there could be no doubt that bullocks fattened a great deal faster in boxes than when tied by the head.

MODEL FARM OF NEW JERSEY.—As the Farm of Professor Mapes is regarded as a pattern, the following account of it, which he has given in the Newark Daily Advertiser, will be read with interest and profit. It shows the advantage of producing a large amount of manure, which may be accomplished by almost every farmer, and mostly with the resources of his own farm.

I would state that my success may be mainly attributed to the use of the subsoil plough and a proper system of manuring.

The land is a very clayey loam, underlaid by clay ten inches thick, on a substratum and decomposed sandstone, and, until the clay was cut through by the subsoil plough, the surface was too wet to be productive.

It may not be uninteresting to your correspondent to know the different methods adopted for the manufacture of this manure. The chloride of lime and carbonate of soda is made by slaking three bushels of shell lime, hot from the kiln, with one bushel of common salt dissolved in water. Common salt being composed of chlorine and soda, the lime combines with the chlorine, forming chloride of lime, which, in turn, receives carbonic acid from the atmosphere, and becomes carbonate of soda. This mass should be turned over every other day for ten days, at the end of which time it is ready for use. Four bushels of this mixture, thoroughly diffused through one cord of muck, will decompose it perfectly in ninety days in winter, and in a proportionately less time in summer.

When this muck cannot readily be procured, any other organic matter will answer the same purpose: pond scrapings, river mud, decayed leaves, or even head lands, with one twentieth its bulk of stable manure or weeds, will answer well.

My stables are arranged thus: Under the oxen, cows, &c., the earth is removed to the depth of eighteen inches, making a space capable of holding a half cord of muck for each animal. This muck is covered at night with salt hay for bedding, and the liquid manure voided by the cattle is absorbed by the muck, and rapidly decomposes it. This decomposition is assisted by the warmth of the animal while sleeping upon the bedding. The solid manure is removed from the bedding each morning, and, after being mixed with twenty times its bulk of muck, is placed under cover. The muck, containing the fluid portions of the manure, is removed every four days, and is also placed under cover: after ten days the manure heap is turned over, and wetted with a weak solution of nitrate of soda, after which it is permitted to remain until sufficiently decomposed for use—thirty days.

All the weeds of the farm are daily thrown into the hog-pen, and the hogs are induced to root among them, to obtain which they keep the weeds in continuous motion until decomposed. About once in ten days, the pen is emptied; and, after salting the weeds to prevent the possibility of their again germinating, they are mixed with twenty times their bulk of muck, and four bushels to the cord of the salt and lime mixture, and placed under cover, where the mass readily heats, and, after twenty days, is ready for use.

These manures, with the occasional use of special manures for special crops, selected with reference to their chemical components as compared with the requirements of the plant desired to be raised, constitute the manures used.

The amount of manure I am enabled to make by the above methods, and the assistance of six oxen, three cows, three horses, and twenty hogs, is about fifty half cords per week.

The subsoil plough is no less important than a sufficiency of manure, and without its assistance no great results can be obtained.

The capacity of soil to perfect vegetables, is precisely in proportion to the quantity of its particles presented to the action of the atmosphere for oxydation; and not one of the most inconsiderable uses of manure is to leave space by its decay for the admission of the atmosphere.

To bring about these conditions, deep ploughing is necessary; and to avoid bringing subsoil of a sterile quality to the surface, disintegrating to a great depth, the subsoil plough must be used.

My surface plough may be used to turn a furrow of any depth between four, and twenty inches, the depth of action being regulated by the guide-wheel. We always use this plough at one inch greater depth than the thickness of surface soil; thus, if the surface soil be fourteen inches deep, the plough is set fifteen inches. One inch of the subsoil is thus brought to the surface at each ploughing, and by the action of the sun and atmosphere, is gradually converted into loam.

The subsoil plough follows in the bottom of the furrow left by the surface plough, and is usually set at not less than seventeen inches: this plough is so constructed as to throw up nothing, but merely to disintegrate the soil at this great depth, replacing it where taken from without mixing it with surface soil. The advantages beyond the admission of atmosphere, are, that in dry weather the roots can pass down below the sun's more immediate action, and obtain moisture; and in wet weather the excess of moisture can pass down through the subsoil cut. If the land is thus kept free from excess of moisture, it can never become cold or sour. After one thorough subsoil ploughing, the land can be worked for much less expense, and is ready for use at an earlier date in the spring.

My seeds being all planted by a drill-harrow, and the rows of plants consequently equidistant from each other, they can be cultivated and weeded by a horse cultivator, instead of using the slow and expensive hand hoe.

Should your correspondent think proper to visit me, I shall be happy to answer any other question he may wish to propose.

Yours respectfully,
JAMES J. MAPES.

ROOKS.—I have myself little doubt but that there may be a good deal of truth on both sides of the question—(i. e. the utility or inutility of rooks) and the conclusion to which I have arrived is two-fold. 1st, the rook is neither to be preserved nor exterminated, but his numbers kept within proper limits; 2nd, there are circumstances regulated by the nature of the country and its cultivation in the neighbourhood of a rookery, which render such a thing either a nuisance or an advantage. A gentleman, a friend of mine, Thos. Butler, Esq., of Jordantown, in the county Dublin, informs me that he has shot rooks, and on opening them, for the purpose of pursuing this interesting and important inquiry, has invariably found nothing in the craw but *masses* of grubs, maggots, and the wireworm. —Richardson.

FATTENING PORK ON OATMEAL.—A prime Lancashire porker has been slaughtered at Garstrang, which weighed, when cut up, 671 lbs., and was valued at £15 7s. 6d. It was fed on oatmeal, and is stated to well repay the keeper.



PALMER'S WHEAT DRILL.

The old, expensive, and complicated English Drill, has been greatly simplified and improved by our enterprising neighbours. It would be a great advantage to Canadian husbandry if this implement were more generally used. The above, which is a recent improvement, is said to combine in a simple and substantial form the merits of the numerous English and American Drills. The inventor challenges the world to produce its equal ! This is taking a pretty wide sweep, at all events. The following is his description of its construction and operation :—

“The frame-work consists of a simple axle, four by six inches, and a pole, on the former of which is placed a box or hopper. One simple distributor driven by a cam wheel and friction rollers, conveys the grain from the hopper into the several drills, through hollow braces or levers, and the quantity in each drill cannot vary a spoonful in sowing five bushels. Each drill is independent of the others, and either can pass over a stone or other obstruction eighteen inches high, without interfering with the operation of the other. It will drill perfectly, a strip of land of any width, from four inches to the entire width of the machine, and will work on land of any shape, without waisting the grain. All the teeth or drills can be raised or remain in a position eighteen or twenty inches from the ground, rendering it perfectly safe to drive over the roughest places. By the most simple movement, the distribution of seed can be stopped in an instant, or continued with the same ease. All the injury the drill can sustain by coming in contact with roots or fast stones, is the breaking of a small wooden peg, which is easily

replaced. The machine is so contrived, that by a very simple movement, the interior work is exposed to view, and at all times, the grain, while passing into the drills, is in full view of the operator, so that he can detect at a glance, any stoppage of the grain, and at once remedy it.”

DAIRY BUSINESS.—Our northern friends must look sharply to their cows, their pastures, meadows, root, corn and other forage crops ; for Virginia, North Carolina, Georgia, and Tennessee are already in the field as competitors in the dairy business. There is not a State in which both cheese and butter cannot be made. Like all other arts, that of rearing good milkers, keeping them well and cheaply, and at the same time manufacturing choice butter and cheese for market, demands experience, care and study. The operation is mainly performed in those seasons of the year, when all animal substances, like milk, whey, buttermilk, and curd, are extremely liable to chemical changes which injure the products of the dairyman. Only a small portion of the butter and cheese made in the United States is really first rate. And why not ? The milk is good when drawn from the udder, but it is badly handled ever after. Less attention is paid to keeping milk pails, pans, churns, cheese tubs or vats, perfectly sweet and clean than is required to secure the best results. Butter when taken from the churn is not properly worked over ; nor salted with pure salt ; nor protected from the influence of atmospheric air, as it should be. The germ of that peculiar chance, known by the common name of “frowy,” is early planted in a mess of butter, although undeveloped for weeks or months.

Butter and cheese which are put up wrong, if kept any time, will never come out right. The changes which they undergo present a subject for close and curious study. As in curing meat, good salt, pure air, and the entire exclusion of oxygen from butter in kegs, and cheese in a well oiled, impervious rind, are the leading matters to be attended to. In cheese-making, the heating of the milk, the condition of the rennet, the

quantity used, and the quantity of salt, the degree of pressure on the curd, the time for it to be in press, the turning of cheese, surrounding with cloth, &c., &c., are all details of great importance. To incorporate into the cheese all the casein (curd) and butter which the milk contained, and preserve both sweet and delicious with aroma peculiar to each, are the objects to be obtained. Keeping milk too long, bad skins, using too much rennet, too much scalding, impure salt, excessive pressing, neglect in turning and oiling, and an offensive atmosphere in the dairy room, are among the most common causes which injure cheese.

Butter is damaged by permitting cream or milk to stand too long before churning; by the defective working out of the buttermilk; bad salt; and too long exposure to the atmosphere before it is packed down in crocks or tubs. Keep the air from your butter as much as practicable.

Plant carrots and corn in drills for your cows; and see that they are milked regularly and clean. A little labour will often produce a good crop of pumpkins. The main point is to raise a full supply of good food, and take care to husband all their manure as well as other products.—*Genesee Farmer*.

SOWING GRASS SEED.

The hay crop in Maine being the most valuable and important of all our crops, whatever immediately relates to its production must be of interest to every farmer.—And to proper seeding down to grass depends much of the success and profit of the crop. When the soil is brought into good condition for grass, it is very important that a good 'catch' be obtained of some grasses which are in themselves valuable for hay and adapted to the soil and situation, and one too, that will hold out until the land requires to be again manured. A failure in this matter makes an important difference in the profits of the farm.

With many farmers, herd's grass and clover are the only grasses sown, and these are generally sown together. It is very probable that in many places other varieties would answer a better purpose. On some farms it would perhaps be well to give all the best varieties which are adapted to our situation and climate a trial. Those which are best suited with the soil of each field will be likely to gain possession of it. And when there is a large variety of seed in the soil and on the farm, we think more fodder will be produced than with a less number of kinds. When the soil becomes so reduced that it will not sustain those of more luxuriant growth, it may sustain others which are better able to thrive on a poorer soil; and under such circumstances it is better to have the latter than not to have them. Let us not only have herd's grass and clover, but also red top, orchard grass, white clover, Rhode Island grass, blue joint, fowl meadow, and even other varieties, as they may be found to be of value.

There has been some difference of opinion as to the proper time for sowing grass seed. We have succeeded very well with herd's grass when sown in August or September, while the clover sown with it did not survive the winter or spring. If clover and herd's grass are to be sown together, we should prefer to sow them in the spring.

When grass seed is sowed with wheat, rye or barley, we have generally succeeded in getting a good 'catch,' while we have never been so successful with oats. We have supposed that the oats might shade and choke the young grass more than other grain. Even where the oats are taken off quite early and the grass had come up well, it has not seemed to do so well afterwards as we had reason to expect. A farmer in Dresden remarked to us that he had uniformly succeeded better with his grass when sown with oats, than with any other crop.

He attributed the general complaint against oats in this respect, to their being generally mowed so close. In this way much of the young grass is cut down, and what is left is very much exposed. He was not anxious to save all the straw, and purposely left stubble enough to protect the grass, while he was careful to let the scythe pass over it in mowing.

At the present time, the price of grass seed is unusually high, and farmers who have to buy their seed will be likely to err in sowing too little. We think that many have failed to obtain good crops of grass by not sowing seed enough. When we seed down to grass we usually expect to gather at least two or three crops from that seed, and if the withholding of a few pounds or a few quarts of seed will materially diminish the annual product for several years, as we think it may, it is certainly not good economy to withhold it.

We are of the opinion that fourteen pounds of clover and a peck of herd's grass seed to the acre is better than any less quantity. By sowing seed enough, the weeds and foul stuff may be kept down the more effectually.—The hay too is finer and better, and the grass will not so soon run out. For hay a greater quantity of seed is required per acre than would be required if the plants were cultivated for their seed. Sir John Sinclair says, "it is a great error in laying down land to grass, to sow an insufficient quantity of seeds. In general twelve or fourteen pounds of clover is the usual average allowance. But that quantity, it is contended, ought greatly to be increased, and in many cases doubled." Says Payson Williams, Esq., "the quantity of grass seed used by me is never less than twelve pounds of clover and one peck of herd's grass to the acre."

In 1843 Isaac Bowles, Esq., of Winthrop, raised on one acre and a quarter of land two crops of hay, which amounted in the aggregate to six tons eighteen cwt. seven pounds. In the spring of 1842 he sowed on this ground with his wheat *thirty pounds of red and white clover, and one peck of herd's grass seed*.—*Maine Farmer*.

FRESH V. DECAYED MANURE.—M. Koerte, professor at the Royal Academy of Agriculture at Mæglin, in Prussia, made some years ago a series of experiments to ascertain whether it is more economical to use fresh or decayed manure, regard being had to the relative proportion of each. I subjoin the principal results of his experiments. 1. Manure exposed to the influence of the atmosphere, in heaps or layers, continually loses its fertilizing principles, and its bulk diminishes in a corresponding proportion. A hundred loads of fresh dung are reduced at the end of 81 days to 73.3 of its first bulk, or loss of 26.7; 254 days to 63.4 of its first bulk, or loss of 35.7; 384 days to 62.5 of its first bulk, or loss of 37.5; 493 days to 47.2 of its first bulk, or loss of 52.8. 2. The loss was much more considerable in a certain time, at the commencement of its decay, than at after periods of this change, as Gazzeri had previously ascertained. 3. Less loss is sustained when manure is spread in layers on the land, and well pressed, than when in small heaps; so that it is advantageous to spread it in layers on the land, and roll it, when it cannot be immediately ploughed into the soil. 4. Although it is impossible to state exactly the loss of bulk of manure when allowed to lie for a long time in the heap, we shall not be far wrong in stating that in common circumstances it is at least one fourth of the whole; so that 100 cart-loads are reduced to 75. M. Koerte concludes from his investigations, both on a small and large scale, that it is more advantageous to carry the manure at once, in its fresh state, to the land (and this more particularly the case with sheep dung,) than to wait until it has decayed; and this rule should be invariably followed, taking at the same time into consideration the nature of the land.—*Pharmaceutical Times*.

CARE OF NEW MILCH COWS.

Inflamed Udders.—During this and the next month, cows will be calving, and should receive the kindest care and attention. A very common trouble with cows, especially young cows, is inflammation of the udder, which, either from the effect of cold or from not being milked soon enough, and therefore stretched or distended too much, becomes "caked," as it is called, and inflamed. Cold water, freely applied two or three times per day, we have found to be an excellent remedy. Soft soap has been recommended as being very excellent to soften and reduce the inflammation.

Retention of the After-birth.—Another trouble which we often hear of is, "that the cow has not cleaned well." Sometimes from want of health, especially in very lean cattle, there is not sufficient action in the proper organs to throw off this substance, and sometimes there is an adhesion, and it is retained.

The best mode to prevent this trouble is by timely attention to the cow, by feeding her well previous to her calving, so as to increase the health and tone of the system. After the birth of the calf, warm drinks should be given, and the following simple method of managing the cow, we have found serviceable, for the knowledge of which we are indebted to one of our neighbours, who has practiced it for several years with good success.

Bind a thick blanket or buffalo skin on the back and loins of the cow, so as to increase and keep up the warmth of the body, and especially that part of it.—*Maine Farmer.*

Ploughing.—This is an important operation, and much of the success of the farmer depends upon its proper performance. Great improvements have been made in the plough within a few years, so that ploughing may now be done in a better manner and with much greater ease to both ploughman and team than formerly. We do not suppose that ploughing answers the purpose of manuring in the least; on the contrary, the fertilizing matter in the soil will be exhausted more rapidly by frequent ploughing. By ploughing and thoroughly pulverizing the soil, its elements are brought into a state to be more readily imparted to the growing crops. If ploughing adds nothing to the soil, it certainly answers an important purpose in bringing the ingredients already in it into a condition to be useful.

Land may be and often is injured by injudicious and unseasonable ploughing. Especially is this the case when the soil is too wet. We ought not to plough when the soil is too wet to crumble or break. Where the land is exposed and liable to wash, it ought not to be ploughed in the fall. In some situations a loss is sustained by the finest and best particles being blown away during the winter, when the ground is not covered with snow.

The proper depth of ploughing depends very much upon the nature and condition of the soil. If there is but little vegetable or animal matter in the soil, we would not bury that little very deep with the plough. We would not therefore plough light and poor soils deep unless we have a large quantity of manure to apply. In many situations the sub-soil plough may be used to advantage, even if the soil is poor. The deeper the soil is loosened in this way, the better. We do not see that this can do any injury, while it often greatly improves the soil and materially increases the crops.—*Maine Farmer.*

THE EUROPEAN MOUNTAIN ASH.—The brilliant appearance of the European Mountain Ash, (*pyrus aucuparia*), when in autumn it is densely clad with its

rich crimson fruit, is a circumstance sufficient to give it strong claims to the care of the arboriculturist, independently of the beauty of its foliage. But a tree, which, from this latter property, has long been a favourite with us, and which though it is common in Europe, we regret to say, is yet but half so well known as it should be, is the Silver-leaved Abele, (*Populus Alba*.) its growth is very rapid, and it is, therefore, well adapted for planting where time is an object of consideration. The flowers are insignificant, but its leaves are highly interesting. The under side of each of these is rendered perfectly white by a dense cottony pubescence, and in a gentle breeze, from their being supported on slender petioles, they are in constant motion. At a moderate distance, to a spectator standing on the windward side, they give it frequently the appearance of being covered with a profusion of white flowers. It has a beautiful effect from the house when seen at some distance in the foreground of a handsome group of trees of a darker green. Added to this, it holds its foliage unscathed by the frost, until the very latest period in autumn.—*Prairie Farmer.*

RULES IN RAISING POULTRY.

1. All young chickens, ducks, and turkeys, should be kept under cover, out of the weather, during rainy seasons.

2. Twice or thrice a week, pepper, shallots, shives, or garlic should be mixed up with their food.

3. A small lump of assaetida should be placed in the pan in which their water is given them to drink.

4. Whenever they manifest disease, by the drooping of the wings or any other outward sign of ill health, a little assaetida, broken into small lumps, should be mixed with their food.

5. Chickens which are kept from the dunghill while young, seldom have the gapes;—therefore it should be the object of those who have the charge of them, so to confine the hens as to preclude their young from the range of barn or stable yards.

6. Should any of the chickens have the gapes, mix up small portions of assaetida, rhubarb, and pepper, in fresh butter, and give each chicken as much of the mixture as will lie upon one half the bowl of a small teaspoon.

7. For the *pip*, the following treatment is judicious: Take off the indurated covering on the point of the tongue, and give, twice a day, for two or three days, a piece of garlic the size of a pea. If garlic cannot be obtained, onion, shallot, or shives will answer; and if neither of these be convenient, two grains of black pepper, to be given in fresh butter, will answer.

8. For the *snuffles*, the same remedies as for the gapes will be found highly curative; but in addition to them, it will be necessary to melt a little assaetida in fresh butter, and rub the chicken about the nostrils, taking care to clean them out.

9. Grown-up ducks are sometimes taken off rapidly by convulsions. In such cases, four drops of rhubarb and four grains cayenne pepper, mixed in fresh butter, should be administered. Last year we lost several by this disease, and this year the same symptoms manifested themselves among them; but we arrested the malady, without losing a single duck, by a dose of the above medicine to such as were ill. One of the ducks was at the time paralyzed, but was thus saved.—*Selected.*

A GOOD WIFE.—When a daughter remarks—"Mother, I would not hire help, for I can assist you to do all the work of the kitchen," set it down that she will make somebody a good wife.—*Uncle Sam.*

Horticulture.

To the Editors of the Agriculturist.

ORNAMENTAL TREES.

GENTLEMEN,—The urgent calls of business prevented the enjoyment of the necessary leisure to make any communication in your last number. The omission was certainly of little consequence. But as you very flatteringly introduced my last remarks on transplanting fruit-trees, &c., to the notice of your readers, I am induced again to send you a few cursory observations, in the hope that they will at least be somewhat interesting, if not of much utility.

Horticulture, as distinguished from agriculture, is the cultivation of a limited spot, by manual labour chiefly, for culinary purposes. It is an art of great antiquity, having been the destined occupation of the original progenitor of the human race. In old countries, possessed of superabundant wealth, gardening is divided into numerous branches: for private use and enjoyment around the mansion; for public recreation in parks and promenades, in the vicinity of towns; for public instruction in botanic and experimental gardens; for public example in national or royal gardens; as a commercial pursuit, in market, orchard, seed, physic, florists', and nursery gardens.

In Canada, and other newly settled countries, gardening, as an art, is necessarily much more circumscribed in its range. A kitchen garden, for the production of a few vegetables useful in domestic economy, and in some cases a small orchard of fruit-trees, are all that is deemed necessary. These are also frequently managed in the most superficial manner. There are now, however, numerous exceptions to this, the general rule. A taste for the ornamental begins to develop itself, which will speedily yield pleasing results. It is becoming apparent to many that a dwelling-house or mansion, however elegant and substantial, lacks a great attraction when destitute of a surrounding lawn, tastefully and systematically planted with trees and shrubs. I would humbly but earnestly wish to stimulate an increasing interest in this matter. It cannot fail to prove a source of unspeakable pleasure to the owner of the soil, and to his family. It is a work of genuine patriotism, as evidencing the wealth and increasing greatness of the country. It exhibits strong proof of superior intellect and a refined taste. In a word, the man who plants some beautiful trees around his dwelling, raises a monument for himself that will endure, fresh and green, long after his mortal part shall have commingled with its kindred dust.

The transplanting season has expired for the present; still it will be of service, for future reference, to enumerate and briefly describe a few of the more popular hardy ornamental trees. Such as are here described are *deciduous*, that is, drop their leaves in autumn. In a subsequent number, I will, if acceptable, say a few words on evergreens. Hardy flowering shrubs will also claim a special notice. First in rank amongst ornamental trees stands the

Horse Chesnut (*Æsculus hippocastanum*), a lofty, regularly shaped, and magnificent tree; in spring, is covered with long spikes of white and pink flowers, of agreeable fragrance. It is admirably adapted for avenues, and also exceedingly picturesque as a single tree.

Linden or Lime Tree (*Tilia Europea*).—One of the most beautiful, graceful and fragrant trees; rises to a great height; has a rich foliage, and branches somewhat drooping or recurved. It is yet rare and scarce in this part of the world, but in Italy it has been esteemed for a shade tree from the remotest ages.

Large Double-flowering Cherry (*Cerasus communis pleno*).—Like cherry-trees generally, this is of elegant foliage and graceful form. When loaded, as it regularly is, with perfectly double white flowers, like roses, it attracts universal admiration.

The cherry is fertile in producing ornamental varieties. The Dwarf Double Flowering is of low growth, and produces handsome double flowers of a bluish colour. The Dwarf Weeping Cherry forms a dense, compact, globular head, with slender, pendulous, or weeping branches. The Large Weeping is quite new, grows to a large size, has strong, pendant branches, and bears a sweet, red fruit.

Chinese Abele, or Silver-leaved Poplar (*Populus auripolia*).—A rapid grower, speedily attaining great bulk of timber and extent of branches; is esteemed mainly for its foliage, the upper side of the leaves being a dark glossy green, and underneath a downy white. When agitated by the wind, and glittering in the sun's rays, it is surpassingly beautiful.

European Mountain Ash (*Pyrus Aucuparia*).—Grows to a moderate size; has a clean, straight, erect stem, and a compact, round head; flowers abundantly in spring, but is attractive principally from the numerous clusters of small scarlet berries with which it is arrayed, when little else of the beautiful can be seen around.

The American Mountain Ash resembles the preceding, but is of more irregular habit, and has a coarser foliage and larger berries. For the sake of variety, it deserves a place in the pleasure-ground.

European Larch (*Larix Europea*).—Attains a great size, of a conical or pyramidal form, tapering in the most regular manner from the base to the top; has recently come into general and well merited repute.

English Hawthorn (*Mespilus Oxyacantha*).—Though of most importance as a hedge plant, when properly trained in the nursery for that purpose, may be beneficially introduced as a small sized tree. Natives of the British Isles need not be told that the flowers are of snowy whiteness and exquisite odour.

Two new varieties have recently been introduced—the scarlet flowering and double white. For some time to come the supply of these will be very limited, but they are worthy of being propagated in great numbers, as when better known, they will become universal favourites.

Locust.—There are three varieties of this tree in general repute. The Yellow Locust (*Robinia pseudo-Acacia*), when young, is a handsome tree,

with foliage remarkably elegant. The same remark applies to the Honey Locust, or three-thorned Acacia. The Gum Locust (*Robinia Viscosa*) has the merit of producing the prettiest flowers. From the delicate light green of their leaves, the locusts offer a pleasing contrast to other trees, whose verdure generally is of a darker hue.

Large Double-flowering Almond (*Amygdalus Communis flora pleno*).—Resembles the peach, but is of stronger growth, and attains greater size. The blossoms are of a rosy red colour, and when in bloom every branch appears a wreath of roses.

Various other descriptions might be enumerated, did space permit. The Balsam Poplar, or Cotton Tree, with its stately form and broad, glossy, fragrant leaves, and the Weeping Willow, of rapid growth and graceful, drooping branches, should not be overlooked in any assortment. The Weeping Willow, to ensure its thrifty growth, requires a dry situation, and when transplanted ought to be largely cut back in the head and branches. This list may hereafter be continued, but in the meantime I presume this will occupy all your available space.

To conclude, during the past season, many thousand fruit-trees have been transplanted. In this section of the country, the work has been carried on with praiseworthy spirit. It is to be hoped this spirit will suffer no diminution. To those who have been at the pains to procure good trees, and have them planted, we would say, take care of them. If loosened at the roots, and suffering from being blown about by the wind, have them firmly tied to a stake. If the roots were defective when planted, let them be well headed back, to reduce the number of leaves. Young shoots that are starting in a direction likely to spoil the form of the tree, should be rubbed off while yet tender, remembering the true, though trite adage, that "as the twig is bent, the tree's inclined." Other little matters necessary to be done in a newly planted orchard, will suggest themselves to those who occasionally look over the young trees, which it is advisable should be done at least once in two weeks.

The insects most destructive to fruit-trees, and the best methods of destroying them, will be noticed in your next number.

I am, gentlemen,

Yours truly,

GEORGE LESLIE.

Toronto Nursery, May, 1849.

NORTH AMERICAN POMOLOGICAL CONVENTION.—

At the meeting of the Pomological Convention, held at Buffalo, September, 1848, the following resolutions were adopted:—

"Resolved, That hereafter an annual assemblage, or convention, shall be held under the name of the 'North American Pomological Convention.'"

"Resolved, That this convention shall be held in the coming year of 1849, in the town or city in which the New York State Agricultural Fair may be held—to convene its session the first day succeeding the closing of the Fair, and that the Recording Secretary of the New York State Agricultural Society, shall be entrusted with the charge, and respectfully solicited to give due notice of the time of meeting, by means of agricultural

journals, and cards of invitation to gentlemen pomologists and horticultural societies throughout the Union and the Canadas, that they may send delegates or attend and bring or send specimens of fruits for exhibition."

The annual show and fair of the New York State Agricultural Society having been fixed for the 11th, 12th, and 13th of September next, at the city of Syracuse, I do, in compliance with the request contained in the above resolution, hereby give notice of the meeting of the North American Pomological Convention, at the city of Syracuse, on Friday, the 14th of September next, the day succeeding the show of the New York State Agricultural Society; and on behalf of the said convention, extend a cordial invitation to yourself to attend, and the society with which you are connected to send delegates to the convention, and to forward specimens of fruits for exhibition.

Any fruits that may be sent can be directed to the care of P. N. Rust, Syracuse.

B. P. JOHNSON.
Sec. N. Y. State Ag. Soc.

Albany, April 6th, 1849.

The Committee chosen by the above-named convention, at its meeting in Buffalo last September, to devise such plans as they might deem best calculated to carry out successfully the objects designed by the members thereof, having concluded, as part of their plan, to appoint other committees for each state, territory, and the Canadas, whose duty it shall be to collect information as to the value of the various varieties of fruits now under cultivation, the value of new seedling varieties, and such other matter appertaining to the subject, as may be of importance, in their opinion, to the fruit-growing interests of the country, or to the community at large, and report the results of their inquiries and observations to the convention on its assemblage in Syracuse on the 14th day of September next.

The following gentlemen compose the committee for the state of New York, viz.:—Herman Wendell, M. D., of Albany County, Chairman; David Thomas, Aurora, Cayuga Co.; Alexander H. Stevens, M. D., Flushing, Queen's Co.; J. W. Knevels, Fishkill, Dutchess Co.; John R. Rhinelander, M. D., Huntington, Suffolk Co.; N. Goodsell, Greece, Monroe Co.; D. Jay Browne, City and County of New York; J. W. Bayley, Plattsburgh, Clinton Co.; W. R. Coppock, Buffalo, Erie Co.

Growers of either old or new varieties of fruit are requested to communicate information of importance in relation thereto, which they may be in possession of, to any of the above-named gentlemen; and originators of new varieties of merit are requested to send specimens to the member of the committee who may reside nearest their vicinity.

As the object for which the above committee has been appointed is one of great importance to the community at large, editors of newspapers throughout the state, and also editors of horticultural or agricultural journals are requested to give the above an insertion in their editorial columns.

HERMAN WENDELL, M. D.,
Chairman of Committee.

Albany, March 1, 1849.

CURIOUS DEVICE IN GRAFTING.—The gardeners of Italy sell plants of jasmines, roses, honeysuckles, &c., all growing together from a stock of orange, myrtle, or pomegranate, on which, they say, they are grafted. But this is a mere deception; the fact being, that the stock has its centre bored out, so as to be made into a hollow cylinder, through which the stems of jasmines and other flexible plants are easily made to pass, their roots intermingling with those of the stock. After

growing for a time, the increase in the diameter of the stems; thus enclosed, forces them together, and they assume all the appearance of being united to one common stem.—*American Agriculturist*.

The following remarks taken from an editorial of the *Gardner's Chronicle* for April 28, having reference to the severity of the weather in England at that period, will not be deemed wholly inapplicable to the season in Canada. The coincidence is a little remarkable. Let us hope that both here and at home, Providence may yet smile upon the husbandman's labours, and crown the year with an abundant harvest.

THE SEASON IN ENGLAND.

"What Weather! What wretched weather in April! Did you ever know so bad a spring?" are questions put on all sides, every one believing, as they always do, that the bad weather of the day is the very worst that has been ever felt; so keen is our perception of pain present, and so quick our forgetfulness of pain past. For ourselves we neither admit London weather to have been unusually severe, nor the spring itself unusually unpropitious. In April 1849, we forget the snow and sleet, and heavy rains, of April 1848, especially since the latter fell by night, and the former have fallen by day. No doubt there has been more snow, and a lower temperature in this present month of April than we always have; the season itself is backward, and May, 1849, will resemble April, 1848. So much the better.

Nothing is more disadvantageous to this country than the nice comfortable warm springs which tender folks delight in. Such springs only force into growth a delicate race which the first cold night cuts off. It is delightful to see on the very threshold of winter, as we quit our dreary tent, the meadows sparkling with vernal flowers, and the orchards painted white and pink with the delicate harbingers of autumnal fruit, and to feel the soft west wind as the Atlantic breathes upon the northern shores. It is a charming thing to realize the old poet's description:—

"Whanne that April with his shoures sote
The droughte of March hath perced to the rote,
And bathed every veine in swiche licour,
Of whiche vertue engendred is the flour;
Whan Zephirus eke with his sote brethe
Enspered hath in every holt and hethe
The tendre croppes, and the yonge Sonne
Hath in the Ram his halfe courtes yronne,
And smale foules maken melodye,
That slepen alle night with open eye.
So priketh hem nature in hir corages;
Than longen folk to gon on pilgrimages, &c. &c."

Nothing can be more agreeable. But unfortunately such pleasures carry penalties in their train, and the fair promise of CHAUCER's spring is too frequently marred by an unpoetical May. There can be no doubt that upon the whole such springs as we are now enduring are far more advantageous to the cultivator than the brilliant days in which holiday folks delight. It generally happens in cold springs that when the cold weather does leave us we feel no more of it; and it is always found that the flowers "engendred" amidst storms and sleet, are the most capable of enduring such cold as they may have to bear.

Such is the case in the present spring. The Plums and Cherries have suffered no great damage; Pears will for anything that has yet happened, be a crop, and as for Apples, they are as safe as if it were at Christmas. Of course we speak of the neighbourhood of London. And yet, because the flowers of standard Apricots are killed, and a good many Gooseberries have perished in the snow, we hear men crying that they are ruined. They find a great part of the Pear blossoms black; they

wholly overlook the numbers that are not touched; and it never occurs to them that the destruction, by some means or other, of four-fifths of all the blossoms that ever appear is indispensable; if they are not carried off by frost, they must prey on each other and fall, from the impossibility of the trees that bore them ever bringing up such a prodigious brood.

TORONTO HORTICULTURAL SOCIETY.

The first exhibition of this Society, since its re-organization, was held at the Government House Grounds, on Wednesday, the 31st May last.

Considering the backwardness of the spring, the show of flowers and vegetables was highly creditable, and gave promise of interesting displays in future. We trust our citizens and gardeners generally will give their aid and countenance to this useful and pleasant enterprise.

The following is a list of successful competitors. Those articles which are marked as second best are not entitled to prizes, but will obtain for the exhibitors a certificate of honour at the end of the season. Those persons who have obtained prizes will receive similar certificates.

12 *Greenhouse Plants*—1st prize, 10s., Mr. Fleming;
2nd, { 5s., Mr. Turner, for W. H. Boulton, Esq.; }
 { 5s., Mr. Gordon. }
6 *Cactuses*—Prize, 7s. 6d., Hon. Mr. H. Sherwood.
12 *Geraniums*—1st, 7s. 6d., Mr. Fleming; 2nd, 5s., Mr. Fleming.

1 *Seedling Geranium*—Prize 5s. Mr. Fleming.
12 *Roses*—1st, 7s. 6d., Mr. Turner, for W. H. Boulton, Esq.; 2nd, 5s., Mr. Fleming.
12 *Pansies*—Prize 5s, Mr. Collier; 2nd best, Mr. Leslie.

12 *Tulips*—1st prize, 5s, Mr. Collier; 2nd, 5s, Mr. F. Stow.

Early Annuals—Prize 5s, Mrs. Bull.
Bouquet—Prize 5s, Mr. Fleming; 2nd best, Mr. Henry Sherwood.

Floral Ornament—1st prize 5s, Mr. Fleming; 2nd 5s, Mr. Leslie.

12 *Hyacinths*—Prize 5s, Mr. Leslie.
12 *Table Apples*—1st prize 5s, Mr. Mackenzie; 2nd 5s, Mr. Tattle.

Brace of Cucumbers—1st prize 5s, Mr. Lewis; 2nd 5s, Mr. Margetson.

50 *Head of Asparagus*—1st 5s, Mr. Burns; 2nd 5s, Mr. Fleming.

Sea Cale—1st prize 5s, Mr. Burns; 2nd best, Mr. Turner.

Spring Spinach—Prize 5s, Mr. Tattle.

Fall Spinach—Prize 5s, Mr. Turner.

Rhubarb—1st 5s, Mr. Fleming; 2nd 5s, Mr. Margetson.

50 *Radishes*—1st prize 5s, Mr. Margetson; 2nd best, Mr. Grainger.

Lettuces—1st prize 5s, Mr. Lewis; 2nd best, Mr. Grainger.

Half Peck Potatoes—1st prize 5s, Mr. Tattle; 2nd best, Mr. Tattle.

Mushrooms—Prize 5s, Mr. Grainger.

EXTRA PRIZES.

Box of Early Vegetables—5s, Mr. Tattle.

Group of Plants—5s, Mr. Bull.

12 *Verbenas*—5s, Mr. Turner.

Floral Ornaments—erected on tent—5s, Mr. Logan.

The Midsummer Exhibition will be held on some day between the 16th and 21st of July. The particular day and prizes to be competed for will be duly advertised.

Mechanics and General Science.

SCIENTIFIC NOTICES.

NO III.

ON DRY FOGS.

A very curious phenomenon which has attracted attention from the earliest ages, is that which is properly known by the above name of Dry Fog, but which in many places is called sun-smoke, moor-smoke, heath-smoke, and by the Germans Hoehrauch and Haarrauch. Although it cannot, properly speaking, be classified with any of those phenomena that have formed the subjects of our preceding papers, inasmuch as the substance contained in the air, and which gives rise to such peculiar appearances, does not readily or visibly fall to the ground, yet it is a subject of such great interest—more especially in this country, from its apparent connection with the Indian summer—that it may not be altogether out of place in a series of articles purporting to treat of the phenomena of the atmosphere.

The dry fog is not a phenomenon of very frequent occurrence. It may be seen slightly in some parts of the world, more especially in Germany, several times in every year; but it is only rarely that it acquires such intensity as to produce the extraordinary and widely spread appearances that attracted so much attention in 1783.

Kæmtz, from whose work the greater part of this notice is taken, mentions a number of recorded instances of peculiar appearances, which are so similar that there can be no doubt they were all produced by the same cause. The first-recorded instance is that which occurred in the year 526, in the reign of the Emperor Justinian, while the last was that of 1834.

The phenomenon, as it usually occurs, and as it is frequently observed in a greater or less degree in the north-western parts of Germany, may be thus described:—When the heavens are quite clear, the usual blue colour is not so bright, but has a more whitish, or even dirty appearance. The blue disappears a few degrees above the horizon, and there we perceive a sharply defined ring quite round the horizon, of a dirty reddish brown colour. The summer clouds, which are—at least, in their upper portions—generally white, have more of a reddish tinge, while the sun itself has the same, more especially when near the horizon, when it is deep blood-red. The light of the sun moreover is so much diminished that we can look at it with the naked eye, even when high in the heavens. Distant terrestrial objects appear dim and as if covered with a bluish veil.

Sometimes these appearances become exceedingly striking, as during the year 1783, the fog was so intense in some places, that objects at a distance of a quarter of a mile could either not be seen at all, or if visible were quite indistinct. The sun was red and its light feeble, so much so, that at the periods of sunrise and sunset it could not be seen. It appeared first in Copenhagen, on the 29th of May, and gradually spread over the whole of Europe; so that between the 16th and 18th of June, it was

observed in most parts of France, Germany, Italy, and the Netherlands. A few days later, it appeared in Norway, on the Alps, in Moscow, in Siberia, and even in Syria; the Adriatic was covered with it, while it extended about 50 miles into the Atlantic. The same appearances were observed in England; and it was found that neither wind nor rain was able to dissipate the fog, although it appeared to become somewhat less dense after a severe storm.

Towards the end of June it began to get thinner, but soon returned again worse than ever, and remained till the end of July. It then disappeared, but returned occasionally in some places to a greater or less extent. In some places it remained, with interruptions, up to the beginning of October. Its disappearance in different places was not attended by similar occurrences. In some, it seemed to vanish of itself; in others, after a fall of rain more or less violent, so that its removal cannot be referred to the same cause.

The fogs of 1783, and that of 1834, might be supposed to be similar to the ordinary ones that we so constantly see; but when the state of the atmosphere is examined, as regards moisture, it is found to be excessively dry, and consequently these fogs must be of a very different nature, and have therefore received the appellation of “dry fogs.”

The phenomenon has been, like all those of difficult explanation, referred to electricity, more especially as the storms that occurred during the prevalence of the fog, in the two years above mentioned, were exceedingly violent; but as both those summers were exceedingly dry, and consequently the clouds very high, and in case of a flash of lightning passing from the clouds to the earth, there must necessarily be a much greater quantity of electricity to produce the effect, when the clouds are high, than when they are low, it does not seem as if there were any ground for giving an electrical character to the phenomenon, especially as we know of no effect produced by electricity of a nature at all similar.

A peculiar smell, said to resemble that of sulphur, was observed in many parts of Holland (1783), and an attempt was made to show that it depended on the presence of sulphurous acid in the atmosphere, as coloured goods exposed to the sun were either bleached, or at least had their colours altered. From various circumstances, however, which our space will not allow us to mention, it appears that this bleaching was produced by other causes.

Vegetation was stated to have suffered materially from the prevalence of the dry fog; but as the summer, except for occasional thunder-showers, was excessively dry and parching, it does not seem as if the fog were instrumental in producing any such ill effects.

Many similar appearances have been observed, but with less intensity. Thus, in 1820, in Holland; in 1821, in England; and in 1824, in Hildburghausen, where it had the smell of coal smoke, and lay so thick over the town that the police searched every house for the suspected fire. In 1834, in May, it was exceedingly strong in parts of Germa-

ny; and in the north-western parts of Germany and Holland, it may be seen more or less several times in each year.

The phenomenon in these localities is ascribed to the periodical burnings which the moors undergo in order to fit them for producing crops. About the beginning of May they are set on fire, and so arranged that they shall smoulder as far as possible, without bursting into flame. By this process an immense volume of smoke is produced, as it has been calculated that the weight of substances burnt and carried up into the air must be at least equal to 1800 millions of pounds. When this immense quantity of smoke is driven away by the wind, it produces the phenomenon of the dry fog.

We might imagine that it would be impossible for smoke to be carried so far, without settling to the ground; but if we look down from a mountain onto a town or village situated in a valley, we shall find that in the morning the air is quite clear, and objects can be seen with perfect distinctness; as soon as the fires begin to be lighted, a thin cloud of smoke intercepts our view, which increases during the day, and instead of sinking to the ground at length attains a very considerable depth, so as often to fill the whole valley. The phenomenon is however more perceptible when the air is dry than when moist; because the fine particles of charcoal which form the smoke absorb water, if any quantity be present in the air, and thus becoming heavier, they more readily sink to the ground.

That the dry fogs in Holland and Westphalia are caused by the burning of the moors, is fully proved by the coincidence in the periods, and by the fact that the fog is only seen in those places to which the smoke can be brought by the prevailing winds.

The dry fog of 1834, which was so remarkable, was most probably caused by the fearful fires which occurred during the summer, both in moors and forests. A large moor in Bavaria was burnt eight feet deep, and the fire extended under the ditches; immense conflagrations also took place in the forests of the Harz, in Prussia, Russia, Silesia, and Sweden. The summer was exceeding dry (it is celebrated for its wine), which accounts for the long continuance of the smoke, and the rapidity with which it spread itself over so great an extent of country.

With regard to the phenomenon of 1783, we have another cause producing so gigantic an effect, viz., the volcanic eruptions that occurred in Iceland and which may be reckoned as among the most considerable that have been recorded. Earthquakes were observed from the 1st of June; and about the 11th, a quantity of smoke rose from the ground in the northern part of the island, and three immense columns of fire were produced, which were visible for more than a hundred miles. The air was so loaded with sand and sulphurous vapours, that it was dark at mid-day. Immense quantities of red-hot lava were poured forth, and filled up the former beds of rivers. The quantity of lava thus emitted was calculated to be sufficient to form a mountain six times as large as Mont Blanc. Shortly afterwards, a subterranean fire took place in the interior of the island, accompanied by shocks of earthquakes. From these causes

so much smoke was evolved, that the sun appeared quite red, and the light was completely obscured near the mountains.

We cannot consider the smoke as directly produced by the volcanoes, inasmuch as we find that the dark column which rises from the crater of an active volcano consists of the vapours of water mixed with sand and ashes, which soon sink to the ground; but when we consider the immense extent of surface covered and inflamed by the lava (seventeen villages were destroyed), and considering that the earth itself seemed to be on fire in the interior of the island, we can easily account for the immense volumes of smoke. The summer of 1783 was also a remarkably dry one, and hence there may have been added to the above cause as many moor and forest fires as usually occur in such seasons.

In conclusion, we may safely assert that the peculiar phenomena known under the name of dry fogs, are caused by the presence of a quantity of smoke in the atmosphere; and that wherever very extensive fires take place, especially of moors or woods, which produce large quantities of smoke, we may expect to observe similar appearances in a greater or less degree. Whether the Indian summer, so well known on this continent, depends on similar causes, is a question on which we shall make a few remarks in our next article.

H. C.

THE WEEDS OF AGRICULTURE.

In furnishing your correspondent, J. C., according to his request, with the botanical names of the commonest weeds of this country, I shall take the opportunity of adding a few general remarks upon these enemies of the farmer.

The prevailing weeds vary in different localities, according to the nature of the soil, situation, climate, &c. Those which are most abundant in one neighbourhood, may be rare plants or perhaps even unknown in another. Hence, in the subjoined list, many may be omitted which in other parts of the province are exceedingly common, and others inserted which to the farmers of the eastern and western districts may be but little known. Thus, in some parts of the Prince Edward District, the poisonous *Datura Stramonium*, Thorn-apple, or Jamestown weed, is a common and well-known weed, but in this neighbourhood it is seldom seen, except in gardens. Many weeds, as the plant just mentioned, have been introduced from other countries, and have become naturalized where the soil and other circumstances are favourable to their growth. Some of them spread slowly, and are perhaps still confined to the vicinities in which they were first grown; while others increase rapidly, and have extended their range over the greater part of the province.

Weeds have been variously classed by writers on agriculture. The most useful arrangement for the farmer is that in which they are divided into two classes, according to the time required to complete the period of their vegetation, because it points out to a certain extent the means to be adopted for their destruction. The first class comprehends the annual and biennial plants. The annual lives

but one year; it flowers, ripens its seeds, and perishes. The biennial lives two years; it produces herbage during the first year of its life, and flowers and seeds in the second. The second class contains the perennials, or plants whose lives extend over a longer period than two years; perennial herbs grow again from their roots, produce new flowering stems annually, and propagate their species by seed. The first class may be destroyed by cutting them down or pulling them up, immediately before or at the time of flowering, thus preventing the propagation of the species as well as killing the individual. The larger plants of this class are generally eradicated with less difficulty than the smaller species, which are not easily destroyed, since their seeds are so numerous that if only a few plants escape destruction they will produce seed enough to ensure a full crop of them the following year. Again, some annuals and biennials are not easily destroyed on account of the imperishable nature of their seeds, which will lie in the ground for years without having their vegetative properties at all impaired, but upon being brought by the plough or otherwise within the influence of the air, will germinate as well as if they had been the produce of the preceding year. Of the second class, some may be destroyed by the means employed for the eradication of the first class; all may be kept under by these means, since they will be prevented from reproducing their species by seed. But a great number of this class, in addition to propagating the species by seed, reproduce themselves individually by suckers, runners, or root-stocks (creeping roots), and constitute the most troublesome of all weeds, especially the last kind, which have "creeping roots," the smallest portion of which remaining in the ground will usually grow and produce a plant. Consequently, weeds of this description require that their roots should be entirely destroyed. This is not a matter of easy accomplishment; but it is absolutely necessary, in order to their complete eradication. Frequent and assiduous tillage of the soil, with the cultivation of root crops and clover, constitutes the most efficient means of destroying them.

ANNUAL AND BIENNIAL WEEDS.

<i>Sinapis arvensis</i>	Wild Mustard, Charlock.
<i>Arctium Lappa</i>	Burdock.
<i>Galium aparine</i>	Cleavers, Goose-grass,
<i>Euphorbia helioscopia</i>	Sun Spurge.
<i>Euphorbia hypericifolia</i>	Oval-leaved Spurge.
<i>Polygonum Persicaria</i>	Spotted Polygonum.
<i>Polygonum hydropiper</i>	Smart-weed, Water-pepper.
<i>Polygonum convolvulus</i>	{ Black Bind-weed, Climbing Buck-wheat.
<i>Bromus secalinus</i>	{ Rye Brome-grass, Chess.
<i>Senecio hieracifolius</i>	{ Fire-weed, Hawk-weed Ground- sel.
<i>Bidens frondosa</i>	Burr Marygold.
<i>Cynoglossum Morisoni</i>	Beggar's Lice, Houndstongue.
<i>Cynoglossum officinale</i>	Burrs, Houndstongue.
<i>Anthemis cotula</i>	May-weed.
<i>Thlaspi bursa pastoris</i>	Shepherd's Purse.
<i>Chenopodium album</i>	{ Lamb's quarters, Goose-foot, Hog-weed.
<i>Amaranthus hybridus</i>	Amaranth.
<i>Verbasicum thapsus</i>	Mullein.
<i>Xanthium strumarium</i>	Cockle-burr.
<i>Gnaphalium uliginosum</i>	Cud-weed.
<i>Panicum</i> (several species)	Panic-grass.
<i>Setaria glauca</i> (and other species)	{ Bottle-grass (Bristly Foxtail, Wild Millet).
<i>Lobelia inflata</i>	Indian Tobacco.

PERENNIAL WEEDS.

<i>Galium boreale</i> (and other species)	{ Northern Bedstraw.
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<i>Polygonum aviculare</i>	Knot-grass.
<i>Ranunculus acris</i>	Crowfoot, Buttercups.
<i>Chrysanthemum leucanthemum</i>	Ox-eye Daisy.
<i>Cnicus arvensis</i>	Canada Thistle.
<i>Rumex crispus</i>	Curled Dock.
<i>Rumex obtusifolius</i>	Broad-leaved Dock.
<i>Rumex acetosella</i>	Field or Sheep Sorrel.
<i>Urtica Canadensis</i>	Canadian Nettle.
<i>Solidago</i> (numerous species)	Golden Rod.
<i>Aster</i> (numerous species)	Aster, Starwort.
<i>Potentilla</i> (several species)	Cinquefoil.
<i>Podophyllum peltatum</i>	May Apple.
<i>Hypericum perforatum</i>	Common St. John's Wort.
<i>Gnaphalium Margaritaceum</i>	Everlasting.
<i>Achillea Millefolium</i>	Yarrow.
<i>Leontodon taraxacum</i>	Dandelion.
<i>Allium Canadense</i>	Wild Meadow Garlic.
<i>Allium tricoccum</i>	Wild Leek.
<i>Triticum repens</i>	Couch-grass.

Of the weeds mentioned in the above lists, some are found chiefly in arable lands, others in pastures and meadows, while a few are abundant in both; hence the division into arable and pasture weeds has been made by some writers. The arable weeds have been subdivided into such as are injurious to the sample of grain; into this subdivision what are termed relative weeds enter, such for instance as oats in a crop of barley, rye in a field of wheat, &c. &c.; and into those which are injurious by encumbering the soil, depriving the growing crop of a large proportion of nourishment, and intercepting light and air: into this subdivision many grasses, of great value in their proper places, enter as relative weeds, together with other grasses of no worth under any circumstances. Among the pasture weeds some are occasionally pernicious, on account of their poisonous effects upon cattle that may chance to feed upon them, although such accidents are rare, as in general cattle instinctively avoid plants of this character. Yet the disorder called the slavers, so prevalent among horses at pasture during a certain period of the summer, is perhaps to be attributed to their feeding upon some acid weed. Another class of pasture weeds are particularly hurtful in sheep-walks, owing to their fruits being armed with small hooks, by means of which they adhere most tenaciously to the fleece, and materially impair its value where they are very abundant: of this kind are cleavers, burdock, burr marygold, hounds tongue, and cockle-burr. Some few plants are detrimental in pastures where cows are grazed, by imparting a peculiar flavour to the milk and butter, as garlic, &c., but such are almost exclusively confined to lands very recently reclaimed from the forest.

The botanical name of the iron-wood tree is *Ostrya Virginica*. It belongs to the Natural Order, Cupuliferae, or Oak family. Linnaean class 21, Monœcia; Order 8, Polyandria.

Toronto, May, 1849.

N.

THE COLD OF ELEVATED REGIONS OF THE EARTH'S SURFACE.

"Before the mountains were brought forth, or ever thou hadst formed the earth and the world, even from everlasting to everlasting, thou art God."—Psalms, xc. 2.

This artificial globe now presents a complete epitome of the surface of the earth, its atmosphere, and all the astronomical and meteorological varieties of its climate. We have its zones of temperature; its cold and heat, dependent upon elevation and aspect; its winds and storms; its clouds and sunshines; the vapours collecting around the summits of miniature mountains snow-

capped; the rains descending on forest tracks, and hilly districts, and thence irrigating its plains and valleys, accompanying with a perpetual deluge the point of direct sunlight through the tropics, tempering the vertical heat, and ministering, there, to the boundless energies of vegetation.

The atmosphere has this quality, that, when *pure* and *free from vapour* it is wonderfully pervious to the rays of light and heat.* Very little indeed of the heat is, in a perfectly clear sky, absorbed in its transit through it. Thus readily allowing the radiation of rays to the earth's surface from the sun, the air lends itself with equal facility to the radiation of heat in the opposite direction from the earth's surface into space. That heat which the air actually receives appears principally to be derived from its contact with the earth, and propagated by conduction from one part in it to the other. If it be asked, Why does not this heated air immediately desert the surface of the earth, and ascend and heat its higher regions, and continually accumulate heat there, rendering them yet warmer than the lower air, which is notoriously contrary to the fact?—the answer at once meets us in the elasticity of the atmosphere; and therefore in its decreasing density at higher elevations, by which, as in the case of the artificial globe, it is made to contain, as in a *vase*, a stratum of warm air, in close contact with the earth's surface, and to confine the heat around it.

The air of the higher regions, when freed from clouds, absorbs little or none of the heat radiated through it, either from the sun, or back from the earth, or from the subjacent atmosphere. Moreover, the air heated by *contact* with the earth, and ascending to these higher regions, loses its heat rapidly as it ascends by radiation and contact, and ascends but to that limited height assigned to it by the diminishing density of the surrounding air. All that remains to warm the higher regions of the air is the heat propagated to it by the *contact of parts*, as it is through solid bodies; and each stratum in succession, as it receives this heat, radiates a portion of it off into space, propagating only the remainder to the next stratum. Thus each successive stratum above us receives a diminished amount of heat, and the air grows colder and colder.† Here there is that marvellous provision for the assembling of a variety of climates nearly upon the same spot of the earth's surface, by which it comes to pass, that within the compass of a few miles may sometimes be seen congregated every characteristic form of vegetation, from the giant plants of the tropics to the lichens of the Arctic zone. In the valleys of the Andes, for instance, are growing palm-trees, and the banana, and the coffee-tree, and the sugar-cane, and the cow-tree, whose trunk being pierced yields a vegetable milk—the majestic forests, the juicy fruits, the gorgeous flowers of the *tropics*. You ascend them 4,000 or 5,000 feet, and you find yourself in the *temperate zone*; fields of European grain wave around you, and there are forests of oak and pine. Climb those lofty mountains yet higher, and beyond the

limits of 11,000 feet you are in a region where grow none but the *Arctic* lichens.

In like manner, on the sides of the Alps, the form of vegetation may be traced from the temperate zone to the region of perpetual snow, in the succession of forests of chesnuts, beeches, oaks, and pines, gradually becoming stunted and more scattered, until they disappear on the borders of the line of perpetual congelation.

By reason of the diminished temperature of mountain track, and the fertilizing influence of clouds, and dew, and rain, which the atmosphere accumulates upon them, they become, in sultry regions of the earth, the *refuge* of vegetation. It is with this allusion, that God, speaking by the mouth of Ezekiel, as the shepherd of his people, says, in the language of prophecy, "I will feed them in good pasture, and upon the *high mountains* of Israel shall their fold be: there shall they lie in a good fold, and in a fat pasture shall they feed upon the *mountains* of Israel" (Ezek. xxxiv. 14).

SUSPENSION BRIDGES AT THE WEST.—Mr. Ellet's success in throwing a wire suspension bridge over the Niagara river has given quite an impetus to the bridge-building spirit in the West. We learn from our western exchanges that Mr. Ellet has already contracted to construct a wire suspension bridge across the Licking river between Newport and Covington, Kentucky.—Bills have passed the Illinois and Missouri Legislatures incorporating a Company to construct a wire suspension bridge over the Mississippi from the Illinois shore to the Missouri shore at St. Louis. The flooring of this bridge, as fixed by the act of incorporation, is to be 112 feet above low water mark. Beside these, a suspension bridge is to be thrown across the Ohio at Wheeling, and another at Cincinnati. Mr. Ellet, it is said, has shown conclusively, that a bridge having a span of one thousand four hundred feet, can be constructed at Cincinnati, susceptible of bearing any weight that can be got on to the bridge. Such are some of the feats of modern science.

WETTING BRICKS.—Few people, except builders, are aware of the advantages of wetting bricks before laying them. A wall twelve inches thick, built up of good mortar, with brick well soaked, is stronger, in every respect, than one sixteen inches thick, built dry. The reason of this is, that if the bricks are saturated with water, they will not abstract from the mortar the moisture which is necessary to its crystallization, and, on the contrary, they will unite chemically with the mortar, and become as solid as a rock. On the other hand, if the bricks are put up dry, they immediately take all the moisture from the mortar, leave it too dry to harden; and the consequence is, that when a building of this description is taken down, or tumbles down of its own accord, the mortar falls from it like so much sand.—*New York Sun.*

MAKING AND USING GLUE.—The hotter glue is, the more force it will exert in keeping the two parts glued together; therefore, in all large or long joints, the glue should be applied immediately after boiling. Glue loses much of its strength by being often melted.

IS AMMONIA POISONOUS?—Unquestionably, if used in any considerable quantity, and doubtless also injurious if applied frequently in even small quantities. Dr. Christison says:—"Several cases of poisoning with ammonia or its carbonate have occurred in the human subject. Plenck has noticed shortly a case which proved fatal in four minutes, and which was caused by a little bottleful of ammonia having been poured into the mouth of a man who had been bitten by a mad dog. The symptoms are not mentioned, but it is probable, from the rapidity of the poisoning, that

* Bouguer has calculated that of 10,000 rays falling upon the atmosphere perpendicularly, 8,123 reach the earth's surface. There is, however, reason to believe that this is much *below* the true estimate.

† Guy Lussac ascended in a balloon to a height of 7,634 yards above the level of the sea, and found the temperature diminished by 72½° of Fahrenheit's thermometer; or at the rate of about 105 yards for each degree. The depression of temperature at the same elevation is, however, different in different latitudes. Thus the height at which a perpetual frost commences its reign, and at which snow is found all the year round on the tops of mountains, is different in different latitudes. Throughout a zone of the earth, extending 20° on either sides of the equator, it may be considered to vary from 16,000 to 17,000 feet, having the less elevation immediately beneath the equator, and the greatest at 20° from it. From this greatest elevation it appears to sink almost uniformly as the latitude increases, until under a latitude of 80° it touches the earth's surface.

a nervous affection must have been induced. More generally, however, the effects are simply irritant; and the seat of the irritation will vary with the mode in which the poison is given. If it is swallowed, the stomach and intestines will suffer; if it is imprudently inhaled in too great quantity, inflammation of the lining membrane of the nostrils and air-passages will ensue. Huxham has related a very interesting example of the former affection, as it occurred in a young man, who had acquired a strange habit of chewing the solid carbonate of the shops. He was seized with great hæmorrhage from the nose, gums and intestines; his teeth dropped out; wasting and hectic fever ensued; and, although he was at length prevailed on to abandon his pernicious habit, he died of extreme exhaustion, after lingering several months.

IMPORTANT DISCOVERY IN VOLTAIC ELECTRICITY.—Mr. Alfred Smee, the Surgeon to the bank of England, and inventor of the battery which bears his name, has announced important discoveries in animal electricity. By a test which he terms electro-voltaic, he has satisfied himself that the terminations of the sensor nerves are positive poles of a voltaic circuit, while the muscular substance is the negative pole. The sensor nerves are the telegraphs which carry the sensation to the brain, and the motor nerves carry back the volition to the muscles. The brain he infers to consist of five distinct voltaic circles, which, upon theoretical grounds he believed to be sufficient to account for all mental phenomena. Mr. Smee has succeeded in making artificial electric fish, and an artificial muscular substance. The bare announcement of such a discovery must put the whole medical world upon the alert, and in their hands for the present we leave it. Should Mr. Smee's views be confirmed by other investigators, he will establish an imperishable name in the records of physiological science.

WHITEWASH.—Take one bushel of unslacked lime, and slack it with cold water; when slacked add to it twenty pounds of Spanish whiting, seventeen pounds of salt, and twelve pounds of sugar. Strain this mixture with an iron sieve, and it will be fit for use after reducing with cold water. This is intended for the outside of buildings, or where it is exposed to the weather. Two coats should be laid on wood and three on bricks. A whitewash brush may be used for laying it on, and each coat must be dried before the next is applied. This may be made any color you please. For straw color, instead of the whiting, use yellow ochre; for lemon color, use ochre and chrome yellow; for lead or slate color, use lampblack; for blue, indigo; for green, chrome green.

USE OF LIME IN VAULTS.—There can be nothing more wasteful to the fertilizing properties of night soil, than throwing quick lime into the privies. It expels the offensive odors, it is true, but these are precisely what are most efficient and desirable as manures. It is a practice only to be tolerated by those who never make any use of the contents of their vaults. The strongly alkaline properties of the lime combine with the carbonic and other acids, already in combination with the ammonia, thus driving off the invaluable fertilizing materials of the latter. Fine charcoal, charred peat, plaster of Paris, sulphuric acid, and common copperas, (sulphate of iron,) are the best additions for vaults, where the contents are to be used as fertilizers. as they absorb the gases, ammonia, &c., and retain all for manure. If these are wanting add dry mould, or peat, tanbark, or saw dust, though these are much more

bulky than the former, in the ratio of their absorbent powers. These may be added from time to time, and when sufficiently accumulated, withdrawn for use.

When the earth contiguous to privies is exposed to saturation, by which the contents may be diluted, and thus drain off, the vaults should have perfectly tight boxes, which can be easily drawn out from behind as fast as filled. The addition of wood ashes is to be placed in the same category with lime, though these are less objectionable. The alkalies of the ashes operate in the same way as the stronger and more active alkali of the lime, though in a less intense degree. But the cinders of the ashes are absorbents of the gases, and, to the extent that they exist are directly beneficial in this combination.—*American Agriculturist.*

THE STOVE.

And here I may premise that I have condemned the open fire place for dust and cold feet, I may denounce the stove for dust, dirt and hot heads. But the condemnation of this mode of heating dwelling houses has now become nearly universal, and were it not for the want of a substitute in the matter of economy, would long ago have been exploded altogether. I shall therefore condense my remarks upon it as much as possible.

The moment you place fire or heat in the centre of a cold room, having no open flue in it, that moment every particle of air within that room is put in motion. This motion is upward from the centre of heat, and rotary, similar to the water in a boiler or cauldron placed over a fire; rising from the centre to the top, thence outward and down the sides of the boiler, until it again reaches the spot it started from, and so on. The hotter your stove gets, the more rapid will be the state of ebullition. Every step taken upon the carpet, especially when near the centre of such a room, a quantity of impalpable dust is sent to the ceiling, until the whole room fairly becomes hazy. As proof of all this, you have only to examine the tops of your book-cases, window cornices or shelves of any kind,—covered with dust; and, in the best kept room, you may write your name every five minutes in the day upon the furniture, especially if it be placed near the walls of the room. It is because of this motion of the air that we avoid taking a wall pew in church, there being in winter a constant current of cold air directly downward, and for the same reason this seat is preferred in summer.

The local currents of cold air in a stove heated apartment are very slight. During the time the room is heating up in the morning, the expansion of the air by rarefaction is considerably more than sufficient to supply the necessary combustion air, and consequently, instead of a draught *inward* it is during this period *outward*; but after the room has obtained its maximum of heat, even then the ingress of cold air is little more than sufficient for this purpose. A room will be heated much more rapidly when the stove is placed in a central position in the room, where all parts of the hot metal shall be freely swept by the current of air, than if it be placed near one of the walls, where but one or two of the plates are made to do the work of the whole. The feet in a stove room are kept warmer than in one having an open fire place, but the head is about thirty degrees warmer! so that the difference of temperature between the head and feet in the two cases is far greater, and therefore more injurious in a stove room than in one heated by a fire place. All these evils however, fall into utter insignificance when compared with that of respiration!—*Ruttan on Ventilation.*

KEEP BEES.—Bees cost nothing for their food, neither for their pasture in summer nor for their provisions in winter.

Domestic and Miscellaneous.

FLOWER-TEACHINGS.

BY MRS. S. C. B. THOMPSON.

'Tis not *lost time* to steal from graver things.
 Awhile away, and muse among the flow'ers!
 Is there not wrought, in every tiny leaf,
 Undying truth for the reflective mind?
 Are they not eloquent tho' void of speech—
 Suggestive to the soul of higher things,
 More lofty uses, and more noble ends
 Than earth's best and highest? Methinks they are.
 The heart is led to Him who bade them spring
 From nothingness to glorious life—who gave
 To each its own sweet time to bud and bloom—
 Its own kind mission to fulfil on earth—
 Its time to fade and die.

There is a voice

That speaketh to the inner ear sweet words
 Of cheering hope, and lowly trust that He
 Who bade them spring from earth, and clothed each leaf
 With grace and beauty rare—hath the same power
 To raise us from the dust to live again.

Heart-comforters are ye, bright flowers, and much
 I love ye for your gentle ministry,
 And for the ample harvest of sweet thoughts
 My soul hath garnered in for after use.
 When sad from Life's o'erburdening ills, my heart
 Doth strength and courage gain from flowers that dare
 The angry storm, and still, with smiling brow,
 Look up through tears to Heaven; thus would I learn
 To look through clouds or sorrow up to God,
 And gain from fading leaf and drooping flower
 The wisdom of a better love than marks
 The schools of men—that wisdom which, heart-learn'd,
 Dims not the eye and leaves upon the brow
 No marks of age. Ah, would that we were prompt
 To learn the lessons they are prone to teach.

Fair Haven, Conn.

—*Am. Met. Mag.*

CARPETS.

But, say the ladies, how can we do without a carpet?
 and then, too, they are so warm and comfortable!

Of course the ladies must be gratified; far be it from me to desire to deprive them of a single indulgence, but I must be permitted to demur to the charge that there is vulgarity in the absence of carpets. They are fashionable, I admit, but that is their sole recommendation. I have not the least doubt in my own mind, that to the health of persons using them, they are the most destructive thing possible, and that the sins of those who persist in their use, will be visited upon their children to the third and fourth generations. Our ancestors were vulgar in their notions, in their language, dress and manner of living, according to our ideas, in the middle of the nineteenth century, but where are the robustness, vigor, health and energy of character which distinguished those of the sixteenth century? This period of early dinners, wainscotted houses and polished floors? Now I insist upon it, that a polished floor, or a floor covered with a well kept oil cloth, albeit the former may be somewhat more expensive, so far from being vulgar, would in my humble opinion be the very reverse. If a general or common use of an article of furniture be the test of vulgarity, then I submit that a carpet comes pre-eminently within the category, (for scarcely a house can be found which cannot boast of its carpet,) and ought, according

to such reasoning, to be repudiated on that account alone!

Now as to the assertion that a carpet adds warmth to a room, I must again be at issue with the ladies. It does not, and here are my reasons for the assertion. In the first place, since carpets have been in use by every body, builders never even pretend to season their flooring; before even the plastering of the house becomes dry, the rooms are covered with carpets. The consequence of this is that in less than a twelve month, the floors become open as sieves. If they are washed two or three times a year this process is obliged to be done with the least possible quantity of water, lest the ceiling of the lower rooms be spoiled, so that the timber becomes perfectly dry and shrunken, and your carpet is almost the only defence left against the constant draught of cold air always circulating between the joists.

I cannot perhaps more satisfactorily rebut the assertion that a carpet adds warmth to a room, than by relating, as shortly as possible, an alteration which occurred some years ago, and to which I was a witness, in a stage coach, between Toronto and this place, and between two gentlemen, disputing as to which side of the Buffalo robe, which they shared between them, was the warmest next the person. The one contended stoutly in favour of the fur side, and by various arguments, but chiefly by the sense of touch or feeling, converted nearly all the passengers to his way of thinking; and after some time, with perhaps less deference than exactly became a person so much the junior of the gentleman who shared the robe with him, and who had wrapped it around with the flesh side next him, deliberately twisted his half of the "Buffalo" with the fur side inward.—This posture of affairs, of course,—the feet of both being left exposed, in a cold and boisterous December day, could not last. The elder gentleman, after a little, turned toward his companion, and after administering a severe but gentlemanly rebuke for the liberty the young man had taken, asked him whether, if the fur side of the robe next the person were the warmest, he did not think *the animal who furnished it would have so worn it!* The gentleman rightly judging that the animal knew best how to wear his own hide! This ridiculous, though perfectly philosophical argument, after some further conversation among the passengers generally, not only restored the covering to the old gentleman's feet, but immediately created a revolution amongst all the robes in the vehicle, and a hearty laugh at the youngster's expense.

Now if the carpet could be placed *underneath* and against the floor, I admit that a good deal of cold might be excluded; but upon the *top* of the floor, like the fur side of the "Buffalo," the ingress of the cold air by capillary attraction of the carpet, would be much facilitated instead of being prevented.—*Ruttan on Ventilation.*

THE BAGNALL FAMILY.—The late Mr. John Bagnall, sen., was originally a persevering, industrious working collier—dependent for the support of himself and family upon the earnings obtained from such a source. Endowed by nature with good qualifications, and possessing a marked determination of character, he was soon enabled to resign his post of "operative miner" for one of a more important nature—viz., that of mineral surveyor; in which capacity he highly distinguished himself. By the exercise of steady perseverance, foresight, and economy, he was enabled shortly after this, in conjunction with a brother who still survives him, to enter into business. A colliery was taken on royalty, which then offered itself—the management of which devolved more immediately upon himself. Here it was more especially that he felt the value of his *practical mining* knowledge. The management was conducted upon

principles of the utmost economy; and the result was, accordingly, beneficial in proportion. Surrounded, as might be expected, with a varied class of individuals, whose conduct was marked, probably, with unenviable excesses, and with part of whom he would occasionally be brought in contact, it might be supposed that temptations on their part were neither few nor feeble. His firmness and decision enabled him to meet such with bold repulses; his mode of procedure, was, therefore, unaltered. He had an object in view, for the accomplishment of which he was steadily progressing. He was ever found at his post in punctual discharge of business demands. As a recompense of diligence and attention, associated with good natural talents, his judgment became matured; his mind, which was always sober and thoughtful, became enlarged; and his opinion in cases of "mining difficulty," was eagerly sought, and highly esteemed. We here see his mind raised to such a position in the world as to command respect of his superiors—a position, moreover, rendered more valuable by his upward movements from the greatest obscurity. In the progress of time he had accumulated a sufficient capital to induce him to extend his operations; accordingly, he embarked in the iron trade; here, too, he acted with his usual degree of caution. His doings in this department were at first small and feeble; he, however, gradually improved his position, till, with the assistance of his sons (some of whom had now grown up, and begun to take an active part in business), he was enabled to make very considerable additions—so much so that, at the period of his death, very few manufacturers, and similar in extent, occupied a better position. It cannot be wondered that his sons, having such a valuable tutor, should make equal progress with their late father. They were now well established, and highly systematic in all their operations. Each appears to have caught the father's particular qualification for industry, and they continued to labour as they had done in their father's day, apparently taking for their motto, "onward." Few individuals, I presume, in the present day have given a closer attention to their business, or exhibited more industrious habits, than the *present* firm of "John Bagnall and Sons;" and what is the result of all this? From the humble occupation of their father, as a *working* collier, events have so progressed, that now we may justly place them in the *first* rank of iron manufacturers. Their establishment, taken as a whole, is exceedingly large. Their mineral property has increased to an astonishing extent—so much so that, in the immediate vicinity of such operations, you can scarcely step without treading upon their property, and they are still augmenting it. The tide of prosperity is with them ever flowing. So effectually have they conducted their operations, that *no* commercial depression, however severe it may be, can affect them. An idea of their great wealth may be gathered from the fact, that, years ago, a certain banker pronounced the firm to be worth from 500,000*l.* to 600,000*l.* Since that opinion was given, we have had a good trade of some continuance—so that, if we take a moderate average of their annual profits, we may now consider them to be worth, probably little less than 1,000,000*l.* sterling.—*Correspondent of the Mining Journal.*

DOMESTIC FISH PONDS.—We are surprised our country friends do not pay more attention to the subject of fish ponds. Many of them have, on some part of their estates, either natural ponds, or small streams running through narrow valleys, which may be dammed at a trifling expense, and occupy but a comparatively small surface of land, and which, in many cases, is entirely worthless. These ponds should be fed with living streams or springs. The former are preferable, as they bring to the pond supplies of seeds, vegetables, roots,

mud, &c., on which many of the finny tribes subsist. Aquatic plants, insects of various kinds, and infusoria are also soon generated in the pond, and supply them with an adequate amount of food. Wherever this is deficient for the inmates, artificial food may be added, as bread, decayed grains, vegetables, meat, and the like. They may be soon taught to come at call, as by the tinkling of a bell, the blast of a horn, the beat of drum, or some musical instruments, and they will thus gather round their food as soon as thrown in. Many species of fish subsist entirely by suction, as the shad, the sucker, &c.; and it is policy to have separated ponds for such of these as may be wanted for use. Others, and by far the larger part, are predatory, and subsist almost entirely on other fish, as the pike, pickerel, &c., and these require a stock of smaller fry to supply them adequately with food.

Some experiments have been made with the shad and other salt-water fish, in acclimatizing them in fresh water, and with entire success. A friend, who has several fish ponds on his estate on the Hudson, says they have bred with him the second year they were placed there. He occasionally supplied them with salt, when they would come about the deposite, and seem to enjoy the brackish water, while the salt remained. When deprived of this, some of the original shad died; but, whether owing to this or some other cause, it is not certain. The younger ones seem to thrive in water entirely fresh. He has also domesticated several kinds of fresh-water fish, some of which have been imported from the European waters, as the carp and tench, but most of them are the best varieties from our inland lakes. Some of them have become such pets, and so familiarly answer to his call, that he has a great repugnance in preparing them for his table, though his friends to whom he frequently sends them, have no such scruples, and pronounce them delicious. He tells a good story of harnessing a nine-foot sturgeon, transferred from the river of his domains. He has properly adjusted straps, so fitted as not to interfere with his fins, to which a ring and trace is attached with a light cork buoy, so as always to be within reach. When disposed for a sail, he gets into his canoe, and quietly affixes a tow line to the buoy; and as soon as the sturgeon feels a jerk, off he darts with railway speed, and whirls him round and round the pond till exhausted, when he rolls over on his back and halts. He is then disengaged from the canoe, and after recovering from his sweat, bounds into the air six or eight feet, and off he darts for the quiet depths of the pond. Some honest Dutchmen, in his neighbourhood, thinking this too good fun to be monopolized, tried the experiment with an untamed sturgeon in the Hudson; when after a short time, he plunged downwards, drawing under the boat, men and all, who came nearly being drowned. They cursed their neighbor and his craft, and have never been known to attempt the experiment since.—*American Agriculturist.*

RECIPES.

Best Cleansing Drink for a Cow after Calving.—Give her 1 lb. of Epsom salts and a tablespoonful of ground ginger, in a quart of good, warm ale.—*Dublin Paper.*

Facts in Cooking Meats.—From an average of the nicest experiments made on good meat, moderately fat, 4 lbs. of beef lose 1 lb. in boiling, 1 lb. 3 oz. in baking, and 1 lb. 5 oz. in roasting; while 4 lbs. of mutton lose 14 oz. in boiling, 1 lb. 4 oz. in baking, and 1 lb. 6 oz. in roasting.

Effects of the Game Law in Great Britain.—It is asserted by the "Sudfolk Chronicle," that the destruction of the game preserves, alone, would produce greater crops in England than all the artificial manures in the world.

A Saturday's New Moon a Wet One.—Dr. Forster, of Bruges, has made a communication to the Royal Astronomical Society, in which he declares that by journals of the weather kept by his grandfather, father, and himself, ever since 1767, to the present time, whenever the new moon has fallen on a Saturday, the following twenty days have been wet and windy in nineteen cases out of twenty.

Roarers Disqualified for Breeding.—At a late meeting of the Royal Agricultural Society of England, Mr. Cator suggested that all stallions and mares known under the name of "roarers," should be disqualified for competing for prizes offered by the society for improving the breed of horses.

How to Kill Lice.—Tobacco water, or the ammoniacal liquor from the gas works, is recommended by the "Agricultural Gazette" for destroying lice.

Measures favourable to the Potatoe Crop.—Mr. J. Cuthill, florist, Camberwell, used 30 cwt. of salt and 30 bushels of soot per acre on light sandy land, planted in February. The crop entirely escaped.

Mr. C. Jeffrey, farmer, Antony, states that Mr. Peel, at Trenant Park, planted his potatoes in October, manured with salt, soot, and charcoal, and had an excellent crop, without one single diseased potatoe.

The Bishop of Carlisle reports from Cumberland that no disease appeared in October-planted potatoes, when the furrows at the time of planting were dusted with a mixture of soot, salt, charcoal, wood ashes, and gas tar.—*Gardener's Chronicle.*

Interesting Experiment in Feeding Cows.—In Switzerland they estimate that hay loses at least a third of its nutritive value by the process of fermentation. The following experiments were made upon cows:—Thirteen cows were put up, and each got daily 36 lbs. of newly-made hay, and gave, one with the other, 25 lbs. of milk; the same got afterwards, and during 15 days, 36 lbs. of old hay of the preceding year, from the same meadow. They gave, after the fifth day, 20 lbs. of milk; after 10 days, 14 lbs.; and the last two days only 12 lbs. The same cows were again put upon new hay, and gave, after the fifth day, 18 lbs.; after the tenth day, 22 lbs.; and after the fifteenth, gave again 25 lbs. This experiment shows clearly that the hay during the process of fermentation loses a great deal of its nutritive value, and if there were means of preventing the fermentation, it would be of great service.

THE BEST KNIFE CLEANER.—Charcoal, ground to powder, is said to be one of the best things ever discovered to clean knives.

HOW TO GET RID OF CROWS.—A cotemporary says that some acute fellow "down east" has discovered a novel mode of getting rid of the crows. You must take some small shelled corn, and run a horse hair through the grain with a needle, and tie a knot in the hair close to the grain, and sow them in corn fields, and the crows will pick up this grain with the hair in it, and it will tickle them, and they will kill themselves a scratching. This is giving them the "Old Scratch" with a vengeance.

PROMPTNESS.—There is no calling in which promptness is more important than in that of the cultivator. A great deal depends on doing every thing in the proper season. In vain to him come the various seasons, bringing seed time and harvest, if he be not ready to sow and reap at the proper time. A short delay in planting may affect the crop materially. If the land be naturally rather wet, a delay of one day in sowing, after it is sufficiently dry, and a storm ensuing, may cause a further delay of one or two weeks, in a wet period, and this may cause a late crop, and a failure from rust or blight.

In raising a root crop, a few days of procrastination may extend the time of sowing to the hot, dry season,

and the consequence is often a failure of seeds, and the blame justly due to neglect, may fall upon the seedsmen.

A few days too late in destroying weeds, and often the labour will be twice as much; and this delay on one piece of land may cause delay in weeding the whole farm or plantation, and the consequence is, a large increase of labour, and often a depreciation in the crop for want of attention in due season. A farmer informed us that he was once too late in weeding an acre of carrots, and the weeds were so numerous and rank, that he found it the most economical way to plough the land, turn under the weeds, and sow anew.

In harvesting hay or grain, a single hour of delay may cause a loss of more than can be earned in a week. One day too late in gathering transient fruits, and a storm succeeding, the consequence may be the loss of the whole crop.

One day too late in cutting up a field of late corn, and the frost may kill it in the milk, so that it will not be worth harvesting; but if cut up and shocked, the crop might be fair. One day too late in gathering winter fruit, and a frost may destroy a large part. By leaving fruit out one day too late after harvesting, it may be spoiled by cold weather. A little too late in gathering cabbages, potatoes, and other roots, and a hard frost will enclose them, and Winter spread his white mantle over the earth.

A thousand cases may be named in which the farmer suffers great loss by being too late. It is impossible for the cultivator to perform every operation at the very best point of time; but he should endeavour to do it, and make his arrangement so as not to have more work on hand than he can do at the proper season; and he should always consider that one day too late, may be the same as months too late, or for ever too late.—*New England Farmer.*

LABOUR IS HONOURABLE.—All labour is honourable. The *Great First Cause* works, Nature works, and every man who enjoys her fruits ought to hold it honourable to work. When shall the glorious time dawn that intelligence and true philanthropy shall annihilate the selfish distinction which pride has made between labour and idleness? May that auspicious day soon arrive when the worthless distinctions between mental and physical labour, which separate man from his fellow-man, shall cease to exist, and all the tenants of the earth meet as equal sovereigns of our common inheritance—the earth.—*Rodgers's Scientific Agriculture.*

STEWED CELERY.—The Horticulturist highly recommends stewed celery. Cut the blanched or white portion of the celery stalks in pieces about an inch in length, and put them in a saucepan over the fire, with milk and water, in equal proportions, barely sufficient to cover them; add a little salt, and let them stew gently, until perfectly tender. Then take out the celery, add a piece of butter to the liquid it was boiled in, thicken it slightly with flour, pour it over the celery and serve it up.

FOR THE HEADACHE.—Sage tea will often give relief. It is stimulating, causing a rapid circulation of blood in the veins, which relieves the brain from a flow to that organ; it also causes perspiration, when taken freely. With food, sage tea is an excellent substitute for tea or coffee, and by some persons it is preferred as more palatable, without any regard to its healthful effects.

The following is generally a remedy for the headache: Open the hair on the patient's head, apply a little fine salt; then apply the palm of the hand, and rub it hard and briskly for a short time; then perform the same

operation on another part, passing over the head, particularly that part which is the seat of pain. The cheeks will soon be flushed with heat, and the head relieved. Whether the effect is wholly owing to the friction, that invites the blood outwardly, and relieves the brain from pressure, or whether the salt has a cooling and contractive effect in driving the blood from the brain, we know not. Perhaps it has a favourable effect in both ways. If there be no efficacy in the chemical nature of the salt, sand or sawdust would answer the same purpose of producing irritation by friction.

Champooing the head, as performed by barbers to cleanse the hair and the head of dandruff, will generally cure the headache. They apply some cleansing liquid, —perhaps soap and water would answer,—and then rub hard and thoroughly, and continue the process twenty or thirty minutes; after which the head is dried by rubbing with a towel.

Showering with cold water is a good remedy. In severe cases, let a person ascend to the second or third story of the house, and pour cold water from a pitcher or coffee-pot steadily upon one point of the patient's head.

A teaspoonful of finely powdered charcoal, drank in half a tumbler of water, will, in less than fifteen minutes, give relief to the sick headache, when caused by a superabundance of acid on the stomach.

Editors' Notices, &c.

T. B., Gore District.—Will probably find something to his purpose in an article on the *Weeds of Agriculture* in our present number. If he will state specifically the information he requires, we will endeavour to supply it.

C. H. M., Carillon, received.—Our correspondent will perceive that one of his communications had been anticipated.—We shall be happy to hear from him again.

MANAGEMENT OF COLTS.—We will endeavour to furnish the information requested by our Vaughan correspondent at an early opportunity.

VENTILATION OF STABLES.—The cause of complaint of a Gore Farmer, is no doubt a want of sufficient air through the stable. The pungent smell arises from the decomposition of the solid and liquid excrements of the horses, giving rise to *ammonia*, in the form of gas or vapour, a substance of great utility as food for plants, but highly injurious to animals. The only remedy consists of thorough ventilation and cleanliness. All animals that breathe by lungs require a constant supply of pure air, but they should not be exposed to cold currents or sudden transitions of temperature when in a confined state. Many of the diseases of domesticated animals might be prevented by common attention to the ordinary laws which influence their health.

J. M.—We have not forgotten our promises, and hope shortly to be in a condition to comply fully with your wishes. Unfortunately the bulky reports and transactions of the three national Agricultural Societies at home cannot be received in Canada through the post office without an enormous expense. We expect in a few weeks to be in possession of a complete set of these important documents, and shall not fail to give our readers a condensed statement of the more interesting and useful portions of their contents.

ERRATA.—In No. 2 of "Scientific Notices," in our last number, page 132, first column, twenty-three lines from the bottom, for *golden*, read "pollen;" fourteen lines from the bottom, for *are* read "were;" eight lines

from the bottom for *have*, read "leave." Second column, thirteen lines from the top, for *their*, read "these;" twenty-five lines from the top, for *peronica*, read "veronica." Page 133, first column, ten lines from the top, for *has* read "have;" nineteen lines from the bottom, for *daplinia*, read "Daphnia." Second column, nineteen lines from the top, for *moun-tanous*, read "mountainous."

PROVINCIAL ASSOCIATION.—We are happy to state that the fears expressed in his address, by the president, Mr. Ruttan, that no grant would be made by government to the Association for the present year, were not well founded. Government has with great liberality, considering the depressed state of the public finances, made a permanent grant of £250 per annum, and a special grant of £350 to relieve the Association from its present liabilities. This circumstance should not in the least relax the exertions of the friends of the Association to raise funds by subscription or otherwise. We shall need all we can get, and more too.

MARKETS.—The late arrivals from England show an upward tendency in prices. How long it will last is impossible to say. A great deal will depend upon the course of events on the continent. If war and commotion continue in the north of Europe—in those countries which have heretofore produced a large surplus of breadstuffs—the effect will no doubt be to send up prices in the English markets. The weather in England is said to be all the agriculturist can wish. So far therefore, there are indications of a good home supply at the coming harvest. We quote the following items:—

By the *Niagara*, New York, June 1—**LIVERPOOL MARKETS**, May 19:

Flour has advanced. Philadelphia and Baltimore was quoted at 23s. 6d.; Ohio, 24s.

Corn has improved, and the quotation for white is 32s.; yellow, 34s. a 36s.

Meal, 14s. a 15s. 9d.

American Wheat, 5s. 9d. a 5s. 10d.

Money continues plenty: Consols 91½. She brings £2,000 in specie.

By the *Europa*, New York, June 6th—**LIVERPOOL MARKETS**, May 26th—

Cotton, in consequence of large imports, was depressed. The market for breadstuffs both here and in London has been quiet, but on the whole steady, during the past week. The demand for Indian Corn has improved, and at some further advance, the current rates being from 33s. for white, up to 36s. per quarter for fine yellow; the latter is now generally held at 6d. per quarter higher. The demand for Flour is moderate but steady, at 23s. a 23s. 6d. for Western Canal, Philadelphia and Baltimore. Ohio has been sold at 25s. per brl.

The selling price for American Wheat is 7s. 2d. for white, and 6s. a 6s. 3d. for red. The weather is all that the agriculturist can wish, and the young crop of wheat and spring corn are of the most promising character.

DELAY.—We are again obliged to apologize for delay in the issue of the *AGRICULTURIST*. The matter was in the printer's hands in time, but from some disappointment in getting a press after the late fire, our printers have been unable to work off our edition in proper time. We trust that after the next number, at all events, we shall recover our true position.

Drinking water, in moderation, neither makes a man sick, nor in debt, nor his wife a widow.—*Spanish Proverb*.

THE CANADIAN AGRICULTURIST.

A SHORT CHAPTER ON BREAD-MAKING.—At no period of our civil history has so much attention been directed to the best means of sustaining life, as at the present. The partial failure of the cereal and root crops in Europe, together with the rapid increase of their already crowded population, has led the chemist, the political economist, and the philanthropist to a clearer and more accurate investigation of the life-sustaining properties of the various articles commonly used as food.

The term "bread," in the broadest sense, can be applied to the main staple, in the support and nourishment of man; whether it be the "potatoes and point" of the Irishman; the ostrich, the guanacho, or the wild bull of the Buenos Ayrean Guacho; the blubber of the Greenlander; the cassava, banana, or sugar-cane of the West India negro; the hump steak of the prairie hunter. The rice of the gluttonous Siamese, the contents of the ample wallet well filled with dates, of the Timbuctoo merchant, and the rich white bread of the American table,—all are to different individuals but so many different forms of "daily bread."

The French Chemists have, by the most patient series of analyses, fixed the utmost alimentary limits of almost every article used as diet. Wheat above all other things, stands pre-eminent as an article of food. With us, as a nation, it forms a most important part of life's comfort. The question before me now is, as to the best way of deriving the entire nutritious substance of wheat when presented in the form of baked bread. That we fail in gaining the object by the use of fermentatives, such as yeast, leaven, &c., can be easily shown. The intelligent reader need not be told that fermentation cannot take place in any substance that does not contain sugar in large quantities, and in the proportion that sugar predominates will be the activity of the fermentation. In other words, the activity of the fermentation depends upon the strength or ability of the yeast or leaven to change or convert into carbonic acid gas the saccharine contained in the wheat. Experiments in this respect enabled me to speak knowingly. The quantity of nutritious matter destroyed in getting what our wives call a "light raise," is as eight to one hundred; or, out of every one hundred pounds of flour, we destroy eight, while the balance is largely injured by the process.

Nor is the practice of raising bread by the use of salæratum any better; indeed, it is infinitely worse. Why are ninety-nine out of every one hundred of the American people afflicted with poor teeth? Solely from the use of salæratum, not "sweet" things, as many suppose. I am confident that the love of gain ought to lead us to abandon the use of the first ingredient, while the love of health, and, above all, a good set of teeth, should induce us to abstain from the use of the latter.

A sweeter and better kind of bread can be made by following the recipe given below. One trial, I am satisfied, will convince any one.

Three cups of flour;

Two teaspoonfuls of cream of tartar;

One teaspoonful of carbonate of soda, dissolved in hot water.

A little salt, and a small piece of butter or lard.

Mix with sweet milk, roll out and bake them quickly. Add a little sugar, and it makes a very nice, healthy cake for children. The same proportions may be carried out to make a large batch of bread.

By placing the bread, when taken from the oven, in a current of sweet, fresh air, it soon recovers the oxygen that was expelled from it while it was in the oven. No bread should ever be eaten while it is hot. It is not fit for the stomach, and will certainly produce derangement,—such as flatulence, acidity, biliousness, &c. It is a want of economy to use warm bread. Many persons will eat three or four warm biscuits, while seldom

will they eat more than two when they are cold; and yet the two cold biscuits contain more nourishment than the four warm ones.—*Valley Farmer.*

DRESSING WOUNDS.—Nine times out of ten, a wound will heal quicker if done up in its own blood, than in any other way. As for a burn, whatever will entirely exclude the air the quickest, is the best. Cotton will do this; so will oiled silk, if stuck down at the edges by any kind of sticking salves. Put nothing on a burn to heal it. Nature will soon do that, when the air is excluded, and the pain will almost immediately cease.

APPLE CUSTARD.—To make the cheapest and best every day farmer's apple custard, take sweet apples that will cook, (such as every farmer ought to have through the summer, fall, winter, and spring,) pare, cut, and stew them; when well done, stir till the pieces are all broken; when cool, thin with milk to a proper consistency, and bake with one crust, like pumpkin pie. Eggs may be prepared and added with the milk if handy, though it will do without. No sweetening is necessary. It may be seasoned with any kind of spice to suit the taste—the less the better.

TORONTO MARKET.

	May 30, 1849.			
	s.	d.	s.	d.
Flour, per bbl. 196lbs. - - - -	16	3	to	21 3
Wheat, per bushel, 60lbs. - - -	3	6	to	4 4
Barley, per bushel, 48lbs. - - -	1	6	to	1 9
Rye, per bushel, 56lbs. - - - -	3	0	to	3 4
Oats, per bushel, 34lbs. - - - -	0	11	to	1 1
Oatmeal, per bbl. 196lbs. - - -	16	3	to	20 0
Pease, per bushel, 60lbs. - - -	1	6	to	2 0
Potatoes, per bushel - - - - -	2	6	to	3 4
Beef, per lb. - - - - -	0	2	to	0 3½
Beef, per 100lbs. - - - - -	15	0	to	20 0
Veal, per lb. - - - - -	0	2½	to	0 4
Pork, per lb. - - - - -	0	2½	to	0 3½
Pork, per 100 lbs. - - - - -	17	6	to	20 0
Bacon per 100 lbs. - - - - -	25	0	to	35 0
Mutton, per lb. - - - - -	0	2½	to	0 3½
Mutton, by the carcass - - - -	0	0	to	0 0
Lamb per quarter - - - - -	2	0	to	3 0
Fresh Butter, per lb. - - - -	0	6½	to	0 7½
Firkin Butter, per lb. - - - -	0	6½	to	0 7½
Cheese, per lb. - - - - -	0	3	to	0 5
Lard, per lb. - - - - -	0	3½	to	0 0
Apples, per barrel, - - - - -	7	6	to	12 6
Eggs, per dozen, - - - - -	0	4	to	0 5
Fowls, do. - - - - -	1	8	to	2 0
Straw, per ton, - - - - -	25	0	to	30 0
Hay, per ton, - - - - -	40	0	to	60 0
Fire Wood - - - - -	10	0	to	12 6

SEEDS! SEEDS!! SEEDS!!!

GROWTH OF 1848.

JUST RECEIVED by the Subscribers, via New York, their usual supply of fresh **ENGLISH GARDEN, FIELD, and FLOWER SEEDS**, among which will be found the following varieties of

TURNIP SEED.

Purple-top Swede,	Yellow Aberdeen,
Skirving's do.	White Flat,
White Globe,	Green Round,
Early Stone,	Red do.

CHOICE FLOWER SEEDS.

100 Varieties—including Annuals, Biennials, and Perennials.

Country Merchants supplied with any particular kind of Seed they may require, put up in papers, upon moderate terms.

LYMAN, KNEESHAW, & Co.

Toronto, March 24, 1849.

**WM. M'DOUGALL,
ATTORNEY, SOLICITOR, &c.,**

*South West Corner of
KING AND YONGE STREETS,
TORONTO.*

*Deeds, Mortgages, and other Legal Instruments
promptly prepared.*

**PHENIX FOUNDRY,
No. 58, YONGE STREET, TORONTO.**

GEORGE B. SPENCER,
(LATE C. ELLIOT.)

CONTINUES every Branch in the above Establishment, as heretofore; and, in addition, keeps constantly on hand a good assortment of Cooking, Parlor, Box, and Air-Tight Stoves, of the most approved patterns.

Also, a Second-hand Engine, with or without the Boiler, Twelve-horse Power, will be sold very cheap for Cash or short payment.

Toronto, Jan. 26, 1849.

1-tf

MAMMOTH HOUSE,

Removed to the Store next door South of Mr. Elgie's Tavern, Market Square.

THOMAS THOMPSON is happy to inform the Public, that, by the praiseworthy exertions of his friends, he has saved from the destructive Conflagration of 7th April, staple and fancy DRY GOODS, GENERAL CLOTHING, HATS, CAPS, BOOTS, SHOES, &c., to the amount of upwards of \$15,000! partially damaged, which will be sold at a great sacrifice. The above Stock, with the early *Spring Arrivals* now opening out, will comprise a splendid assortment of *cheap and fashionable Goods*, the whole of which he is determined to have cleared out previous to his re-opening the new Mammoth House.

Toronto, 17th April, 1849.

SEVERN'S BOTTLED ALE.

THE Subscriber, having resumed his former Business in a convenient locality, with a large stock on hand, of a superior quality, and in prime condition, would hope to secure a continuance of the patronage and support hitherto conferred upon him.

J. D. BARNES,
6, Wellington Buildings.

Adjoining Mr. Sterling's, King-st.
Toronto, Jan., 1849.

JOHN M. ROSS,

AGENE for Hall's Patent Moulding and Pressing Machine; also, for the Genesee Agricultural Seed and Implement Warehouse, Rochester, N. Y.
City Wharf, Church Street, Toronto:
20th March, 1849.

PAPER HANGINGS!

ALARGE and CHOICE assortment of PAPER HANGINGS, of the *newest styles of patterns*, for Sale, wholesale and retail, by

BREWER, MCPHAIL, & CO.,
46, King Street East.
Toronto, April, 1849.

5-lin.

BRONTE MILLS FOR SALE.

THE Property consists of sixteen feet privilege on the Twelve-Mile-Creek on the Lake Shore, in the Township of Trafalgar, and about seventy-five acres of good cleared farm land; a large stone and frame Wool-len Factory, 82 feet by 32 feet, and three stories high, capable of being easily converted into a Flouring-Mill; a Grist Mill, with one run of Stones, Smut Machine and all requisites; Two Saw Mills, with Circular Saw; Lumber Yard Railway; a Blacksmith's Shop and several Dwelling Houses. This property is now let to a yearly tenant for £200 per year, and would bring on a lease £250. Price £2,500, of which only £100 would be required down; the residue might be paid by instalments as agreed upon.

ALSO,

A Privilege on the same Creek of 12 feet, next above the Mills, with about 75 or 80 acres of land, mostly cleared and in cultivation, and an excellent Mill Site, with good Roads. Price £1000, of which £300 would be required in Cash; the remainder by instalments. The option of this part of the property is offered to the purchaser of the first, and, if not taken, it will be sold separately.

ALSO,

Adjoining the above, a Farm of about 70 acres, in full cultivation, with a large unfinished Dwelling-House thereon, and an Orchard of four acres of grafted Fruit Trees. Price £700, of which only £200 would be required immediately; the rest in ten years. The whole of the above property will be sold together, if desired. For particulars apply (post paid) to S. B. Harrison, Judge H. D. C. Toronto.

Toronto, March 1, 1849.

STOVES! STOVES!! STOVES!!!

**J. R. ARMSTRONG,
CITY FOUNDRY,**

No. 116, Yonge Street, Toronto,

HAS constantly on hand Cooking, Box, Parlour and Coal Stoves, of various patterns and sizes, *very cheap for cash.*

Also, a New Pattern Hot-air Cooking Stove, just received, taking three-feet wood, better adapted for the country than the Burr, or any other Stove now in use. It has taken the First Premium at every Fair in the United States, where it has been exhibited.

Ploughs, Sugar Kettles, Grist & Saw-Mill Castings, Steam Engines, Sleigh Shoes, Dog Irons, and a general assortment of Castings.

SHOE AND LEATHER STORE.

DANIEL FARAGHER begs to inform his friends and customers that he has opened a *Shoe and Leather Store*, at No. 22½ Yonge Street, Toronto, where he will be prepared to furnish all kinds of work in his line at the most reasonable prices. Having a Tannery of his own in active operation, he can supply the trade and others with as good an article of Leather, and at rates as low, as can be obtained elsewhere.

DANIEL FARAGHER.

January, 1849.

1-tf.

MESSRS. DENISON & DEWSON, Attorneys,
&c., New Market Buildings, Toronto.

January 26, 1849.

CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. v. 9.

GEORGE BUCKLAND,
WILLIAM McDUGALL, }

{ EDITORS AND
PROPRIETORS.

VOL. I.

TORONTO, JULY 2, 1849.

No. 7.

The Canadian Agriculturist,

A MONTHLY JOURNAL OF AGRICULTURE, HORTICULTURE, MECHANICAL AND GENERAL SCIENCE, DOMESTIC ECONOMY & MISCELLANEOUS INTELLIGENCE: Published by the Proprietors, W. McDUGALL and GEO. BUCKLAND, on the first of each month, at their Office, near the South-west corner of King and Yonge Streets, Toronto.

Subscription ONE DOLLAR, *in advance*. Advertisements 4d. per line each insertion.

Societies, Clubs, or local Agents ordering twelve copies and upwards, will be supplied at 3s. 9d. per copy.

Money, enclosed in a letter, and addressed to the "Editors of the Agriculturist, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, *need not wait to be called upon*.

Payment *in advance* being the only system that will answer for a publication so cheap as ours, we shall send the remainder of the volume to none but those who *order and pay for it*.

Subscribers who desire to continue the work, will do well to send their orders without delay; for, as we do not mean to print a large edition, with the view of having a surplus, we cannot promise that at the end of two or three months we shall have any back numbers on hand.

TRAVELLING AGENTS.—Mr. T. M. Munn is our Travelling Agent for the Eastern section of the Province; Mr. Palmer for the Northern; and Mr. James Wilson for the Western: who are authorised to receive subscriptions for the last year's volume as well as for the present.

LOCAL AGENTS.—Any person may act as local agent. We hope that all those who have heretofore acted as such will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending *four* subscriptions. Those sending *twelve* and upwards will be supplied at 3s. 9d. per copy.

TORONTO NURSERY.

FOR SALE, an extensive collection of FRUIT TREES, consisting of all the choicest sorts of Apples, Pears, Plums, Cherries, Peaches, Grape Vines, Raspberries, Gooseberries, Strawberries, Currants, Asparagus, and Rhubarb Root, &c.

Also, Ornamental Trees, Flowering Shrubs, Hardy Roses, Herbaceous Flowering Plants, &c., in great variety.

Descriptive Catalogues, containing directions for transplanting, furnished *gratis* to post-paid applicants.

March, 1849.

GEORGE LESLIE.

4

CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash Prices for 1000 bushels clean Timothy Seed; 100 bushels clean Spring Tares; 100 bushels White Marrowfat Pea; and 25 bushels Flax Seed.

JAMES FLEMING,

Yonge Street, Seedsman and Florist.
Toronto, Jan. 1, 1849.

1

Advertisements.

GENESEE MUTUAL INSURANCE COMPANY, CAPITAL, 600,000 DOLLARS.

THIS well-known Insurance Company, having extended its business into this Province during the last year, has appointed Mr. McDUGALL, one of the Editors of the "Agriculturist," Agent for Toronto and Vicinity.

The Company is established on the soundest and most approved principles; as the success which has attended its operations, since its establishment, thirteen years ago, fully proves. Very hazardous risks are not taken; and the Company will not insure in one risk more than £1,250, nor more than £1,500 upon property so situated as to be exposed to destruction by one fire. No insurance will be taken to a greater amount than two-thirds the value of the property. These, with other precautions strictly observed, have made this one of the *cheapest and safest* Companies to be found.

The high character which the Company has obtained for honourable dealing and promptitude in settling losses, renders it worthy the notice of all Canadian Insurers.

Agency for Toronto, &c., at the Office of the "Agriculturist," South-west Corner of King and Yonge Streets.

Toronto, April, 1849.

ADELAIDE ACADEMY, FOR THE EDUCATION OF YOUNG LADIES, Corner of Bay and Wellington Streets, TORONTO.

THE next Session of Adelaide Academy will commence on Thursday, the 4th of January, with Lectures on Chemistry and Astronomy.

Pupils are received at any time during the year, except from the 1st of July to the 24th of August.

Competent and experienced teachers are engaged to give instruction in all the solid branches of an English Education, in Instrumental and Vocal Music, Drawing, Painting in Water Colours, Oil Painting, Miniature Painting, &c.

Lectures will be given to the classes in Natural Philosophy, Chemistry, Astronomy, Physiology, and Biblical History.

The Academy is divided into four departments, with experienced Teachers over each.

Board	£0 10 0	per Week.
Tuition in English Studies.....	1 0 0	Qr.
Board & Tuition in English Studies	26 0 0	Ann.

Pupils attend the Church which their Parents or Guardians direct.

REFERENCE

Is politely permitted to—

The Honourable The Chief Justice,

The Honourable Robert Baldwin.

The Honourable J. H. Price.

Henry Ruttan, Esq., Sheriff N. D.

W. B. Jarvis, Esq., Sheriff H. D.

W. S. Conger, Esq., Sheriff C. D.

Rev. Dr. Richey, Rev. E. Wood, Superintendent of Missions; Rev. H. Esson, A.M., Professor in Knox's College; and to numerous Patrons throughout the country.

Cards, giving particulars, can be obtained at this office, or at the Academy.

J. HURLBURT, A. M., Principal.

Toronto, 14th December, 1849.

NEW CARRIAGE FACTORY.

WILLIAMS & HOLMES,

HAVE REMOVED their *City Carriage Repository* to 142, Yonge Street, where they have commenced a Manufactory in all its branches. Parties wishing to purchase for Private or Public Business, are requested to give them a call before purchasing elsewhere, as their facilities are such as to enable them to manufacture cheaper than any other Establishment in Toronto.

Toronto, January 1, 1849.

1-tf

N.B.—The public are respectfully invited to an inspection of their Lumber and other Building Materials, as none but the very best will be used.

CHOICE FRUIT TREES.

Rosebank Nursery, near Amherstburg, C. W.

THE Proprietor has for sale a most extensive assortment of all the choicest kinds of Fruit Trees, consisting, in part, of 190 varieties of Apples, 130 of Pears, 70 of Peaches, 70 of Plums, 50 of Cherries, 10 of Apricots, 10 of Nectarines, 25 of Foreign Grapes, native Grapes, Quinces, Gooseberries, Currants, Raspberries, Strawberries, Almonds, Chesnuts, Filberts, Mulberries, &c. &c.

Also, a fine collection of Ornamental Trees and Shrubs, Roses, Tulips, Hyacinths, Pæonies (Tree and Herbaceous), &c. &c.

New descriptive priced Catalogues will be sent to all post-paid applicants. Specimen Trees of every variety cultivated have been planted out, which are mostly in a bearing state, and from which the scions have been cut, offering a guarantee of the correctness of the kinds, which few Nurseries possess.

Trees will be carefully packed so as to carry any distance with perfect safety, a small extra charge made for packing, and they can be forwarded with dispatch to any part of the Province by the Propeller "Earl Cathcart," which will ply regularly during the season between Amherstburg and Montreal, touching at Port Stanley, Toronto, Kingston, &c.

Orders should be sent early, to ensure their going by the first trip of the Propeller. Cash or proper references should be sent with the order.

JAMES DOUGAL, Proprietor.

Rosebank, near Amherstburg,

March 23, 1849.

4-2ins.

GARDEN AND AGRICULTURAL SEEDS.

THE Subscriber begs to inform his friends, and the public in general, that his stock of fresh Garden and Agricultural Seeds for the spring sowing is now complete. The Subscriber's long and practical acquaintance with his business, enables him to select only such kinds of seeds as are most suitable for this climate. The vitality of each sort is fully tested before offered to the public; new varieties and such as are raised in greater perfection in Europe, are annually imported from sources that can be relied on.

Country merchants, and others, wishing seeds to sell again, can be supplied on the most moderate terms.

Cabbage, Cauliflower, Brocoli, Celery, and Tomato plants in their season, carefully packed and forwarded according to order.

JAMES FLEMING,

Seedsman and Florist, Yonge Street

Toronto, March 1, 1849.

26 1-m.

T H E CANADIAN AGRICULTURIST.

VOL. I.

TORONTO, JULY 2, 1849.

No. 7.

ON THE PROPER TIME FOR CUTTING GRAIN AND HAY.

As the season for hay-making will have arrived by the time this number reaches most of our subscribers, and that of the grain harvest will follow in quick succession, we think a few observations on the proper time for cutting, will be deemed neither unimportant nor unseasonable.

It may now be stated as a well ascertained fact, that farmers in general do not commence the operation of cutting either grass or grain sufficiently early to secure the maximum of quality with quantity. In a climate like ours, which admits of only a short season for the growth and maturity of crops, this is a matter of much economical importance. By commencing cutting a week or so earlier than is commonly practised, not only is that time saved, and the harvest season thereby lengthened—an object which the practical man can appreciate,—but as we shall proceed to shew, the quality of the grain is superior and the quantity larger.

Mr. John Hannam of North Deighton, Yorkshire, was the first, we believe, to submit this subject to the test of careful and varied experiment. We have not space to enter into details, as they are given in the *Scottish Journal of Agriculture* for 1841-2, but it will be sufficient for our present purpose simply to state the results. We may observe, however, that subsequent observations both in Europe and America have very powerfully strengthened Mr. Hannam's conclusions.

Of wheat reaped at various times, the following were the advantages and disadvantages derived:—

No. 1,—reaped *quite green* on 12th August, and stacked 26th August, gave a return of £11 17 0 per acre.

No. 2,—reaped *green* on 19th August, and stacked 31st August, gave a return of £13 6 0 per acre.

No. 3,—reaped *raw* on the 26th Aug., and stacked 5th Sept., gave a return of £14 18 0 per acre.

No. 4,—reaped *not quite so raw* on 30th August, and stacked 9th September, gave a return of £14 17 4 per acre.

No. 5,—reaped *ripe* on 9th Sept., and stacked 16th Sept., gave a return of £13 11 8 per acre.

Hence a loss of £1 14 8 per acre upon No. 1 as comp'd with No. 5

" " " 0 5 8 " " " No. 2 " " " No. 5

" " " gain " 1 6 4 " " " No. 3 " " " No. 5

" " " " 1 5 8 " " " No. 4 " " " No. 5

" " " " 3 1 0 " " " No. 3 " " " No. 1

Hence, also, wheat reaped a fortnight* before it is ripe gives an advantage on every point, namely:—

In weight of gross produce of 13½ per cent.

" " " equal measures, nearly . . . ½ " "

" " " equal number of grains, nearly 2½ " "

" " " quality and value, above . . . 3½ " "

" " " weight of straw, above . . . 5 " "

On the other hand, wheat, reaped a *month* before it is ripe, gives an advantage of 22 per cent. in weight of straw compared with the ripe, but suffers disadvantages in every other point, particularly in the weight of the grain. From 3 equal patches of the same field of wheat upon a thin limestone soil, cut respectively 20 days before the crop was fully ripe, 10 days before ripeness, and when fully ripe, Mr. Hannam ascertained the produce to be in *grain* as follows:—

20 days before.	10 days before.	fully ripe.
166 lbs.	220 lbs.	209 lbs.

Professor Johnston found upon analysis that the per-centage of flour, sharps, and bran, yielded by each, and of water and gluten in the flour, was as follows:—

When cut.	In the grain per cent.			In the flour per ct.	
	Flour.	Sharps.	Bran.	Water.	Gluten.
20 days before it was ripe,	74.7	7.2	17.5	15.7	9.3
10 days before,	79.1	4.5	13.2	15.5	9.9
Fully ripe.	72.2	11.0	16.0	15.9	9.6

"In so far as these experiments go, therefore, it appears that when cut a fortnight before it is ripe, the entire produce of grain is greater, the yield of flour is larger, and of bran considerably less, while the proportion of gluten contained in the flour appears also to be in favour of that which was reaped before the corn was fully ripe."

Independent of the increased weight and quality of grain by early cutting, and the extension of time which such a practice gives to the period of harvest, there are other circumstances deserving considera-

* This period it should be observed applies to England, where the harvest is much slower in ripening than in Canada. The time must be considerably abridged to suit the climate of this country.

tion. The harvest by being commenced earlier affords the better chance of securing a crop; particularly in countries, where the season is late and the climate moist and variable; while a considerable saving is effected in the smaller number of workmen required in gathering the harvest. A great loss is frequently sustained by over-ripe grain being beaten out by cradling and high winds, which early cutting would entirely obviate. Besides the straw is of better quality either for feeding or manure. The value of straw as an article of food depends upon the quantity of nutritive matter it contains. By early cutting, the sugar, starch, gluten, &c., which constitute the most nutritious portions of all the grasses, are secured in their largest quantity. Hence grass should be cut for hay when in bloom. If the operation be deferred till the flowers have faded and the seed formed, a large portion of the saccharine matter of the plant has become converted into woody fibre, a comparatively innutritious substance. Farmers sustain annually very great losses from inattention to these well established principles. The following passages from Professor Johnston's admirable treatise on "*The Elements of Agricultural Chemistry and Geology*," (p. 232) throw an interesting light on the subject to which we have been endeavouring to awaken up the attention of our readers.

1. *Hay*.—The period at which hay is cut, or corn reaped, materially affects the quantity (by weight) and the quality of the produce. It is commonly known that when radishes are left too long in the ground they become hard and woody—that the soft turnip stem of the young cabbage undergoes a similar change as the plant grows old,—and that the artichoke becomes tough and uneatable if left too long uncut. The same natural change goes on in the grasses which are cut for hay.

In the blades and stems of the young grasses there is much sugar and starch, which, as they grow up, are gradually changed into woody fibre. The more completely the latter change is effected—that is, the riper the stem of the plant becomes—the less sugar and starch, both readily soluble substances, its various parts contain. And though it has been ascertained that woody fibre is not wholly indigestible, but that the cow, for example, can appropriate a portion of it for food as it passes through her stomach; yet the reader will readily imagine, that those parts of the food which dissolve most easily, are also likely—other things being equal—to be most nourishing to the animal.

It is ascertained, also, that the weight of the hay or of the straw we reap, is actually less when they are allowed to become fully ripe; and therefore, by cutting soon after the plant has attained its greatest height, a larger quantity, as well as a better quality of hay, will be obtained, while the land also will be less exhausted.

2. *Straw*.—The same remarks apply to crops of corn,—both to the straw and to the grain they yield. The rarer the crop is cut, the heavier and more nourishing the straw. Within three weeks of being fully ripe, the straw begins to diminish in weight, and the longer it remains uncut after that time, the lighter it becomes and the less nourishing.

3. *Grain*.—On the other hand, the ear, which is sweet and milky a month before it is ripe, gradually consolidates, the sugar changing into starch, and the milk thickening into the gluten and albumen of the flour. As soon as this change is nearly completed, or about a fortnight before it is ripe, the grain of wheat contains the largest proportion of starch and gluten. If reaped at this time, the bushel will weigh most, and will yield the largest quantity of fine flour and the least bran.

At this period the grain has a thin skin, and hence the small quantity of bran. But if the crop be still left uncut, the next natural step in the ripening process is, to cover the grain with a better protection, a thicker skin. A portion of the starch of the grain is changed into woody fibre,—precisely as in the ripening of hay, of the soft shoots of the dog-rose, and of the roots of the common radish. By this change, therefore, the quantity of starch is lessened and the weight of husk increased; hence the diminished yield of flour, and the increased produce of bran.

Theory and experience, therefore, indicate about a fortnight before it is fully ripe as the most proper time for cutting *wheat*. The skin is then thinner, the grain fuller, the bushel heavier, the yield of flour greater, the quantity of bran less: while, at the same time, the straw is heavier, and contains more soluble matter than when it is left uncut until it is considered to be fully ripe.

In regard to *oats*, it is said that the superiority of Ayrshire oat-meal is partly owing to the grain being cut rather *glazy* (with a shade of green upon them), and the straw is confessedly less nourishing for cattle when the crop is allowed to stand till it is dead ripe. A week before full ripeness, however, is the utmost that is recommended in the case of oats, the distance of the top and bottom grains upon the stalk preventing the whole from becoming so uniformly ripe as in the ear of wheat.

Barley cut in the *striped* state is also thinner in the skin, sprouts quicker and more vigorously, and is therefore preferred by the maltsters.

EDITOR'S NOTES.

Having recently completed a tour through the Districts, comprising the eastern section of Upper Canada, for the purpose of advocating the claims of the Provincial Association, and procuring subscriptions, a few short remarks in reference thereto may not be unacceptable to our readers.

June 1st: met a number of office-bearers of Agricultural Societies in Prince Edward District, at Pictou, who evinced the deep interest they felt in the success of the approaching exhibition at Kingston, by a vote at a subsequent meeting, of

50*l*. We would recommend our Prince Edward farmers to pay more attention to the improvement of stock and dairying; the approaching show at Kingston will afford them facilities for so doing. We observed at Bloomfield, a hop garden belonging to Messrs. McDonald and Mills, managed in a superior style and of great luxuriance. Altogether it reminded us of some of the best plantations of the old country. Mr. Barker, of Picton, has a hop plantation of seven or eight acres, which appeared promising, the soil of excellent quality. We recommend hop growers to be particularly careful to keep off superfluous water during winter and spring, by furrows and under-ground drains; early, firm, and straight poling; and to get the vines to the poles as soon as they are of sufficient length. Hop growing may be made profitable on a small scale. Canada ought at once to produce enough of this article for its own consumption, and we hope it is in a fair way of doing so.

Next day we visited Belleville, and met several members of the Victoria District Society; when, after passing a liberal grant of 50*l*. towards the Kingston Exhibition, an interesting conversation or discussion was entered upon in reference to several important points of farm practice. The average quantity of clover seed sown per acre, was stated to be five or six pounds, with double that quantity of timothy; wheat a bushel and a half, and oats two bushels per acre. No fixed quantity could be depended on it should vary according to the state of the soil, seasons, and mode of cultivation. The general opinion being, that a sufficient quantity of grass seeds was not usually sown.

June 4*th*: a numerous meeting of the Executive Committee, held in the court house, at Kingston, when, after disposing of the business of the Provincial Association, a long and interesting discussion took place on several important matters relating to agriculture, such as the improvement of live stock, the application of plaster, lime, burnt clay, &c. Messrs. Marks, J. McDonald, A. Cameron, Cumming, Stark, and several other gentlemen took part in the proceedings. But one opinion prevailed as to the necessity of paying more attention to the improved breeds of cattle and sheep. The Hon. J. McDonald and Mr. Stark strongly urging from their own experience the claims of the Durhams. Lime, plaster, &c., had been found generally beneficial, and when applied with judgment profitable. We took occasion to impress on the meeting the desirableness of publishing reports and transactions in connection with the Provincial Association, as practised at home and in the United States, and of giving prizes for reports on the agri-

culture, &c., of different districts. Such information when embodied in an annual report, going forth under the sanction of the Society, would carry with it a weight and importance that would attract more attention to the great and as yet but partially developed resources of the country.

In company with Mr. Angus Cameron, we proceeded to Brockville, Prescott, Cornwall, &c., from all of which the Association will receive more or less support. Had much interesting conversation with the farmers on the improvement of Agriculture, and the management of Societies. Dr. Jessop of Prescott has some good improved stock; also Mr. Freeland, of Brockville, whose neat and well managed farm we had the pleasure of going over, as well as admiring the picturesque scenery of the noble St. Lawrence.

The districts of Ottawa and Dalhousie possess as yet, but few prominent agricultural characteristics, lumbering being a principal employment and source of wealth. Yet, even here, spots are occasionally to be seen where persevering industry has made the sombre forest "to blossom as the rose." We were particularly pleased with the residence and farm of Wm. Thompson, Esq., near Bytown; the gardens and grounds being laid out in a tasteful manner, and kept in the neatest order. The same may be said of the farm, live stock, &c., and we hope to receive occasionally a few practical hints from the owner and his intelligent old Scotch gardener. We may also express the same hope with regard to Captain Baker, who is an active promoter of agriculture in that vicinity.

June 12*th*: met this evening a number of farmers at Easton's Corners, in the Township of Wolford; Alexander McCrea, Esq., presided. After the address, considerable discussion followed in reference to Agricultural Societies, the efficiency of which it was thought might be much increased. Uniform and systematic action throughout the Province, was considered essential to their harmonious working, and that the Provincial Society should form a common centre for receiving and imparting information. Throughout this section of country scarcely any fall wheat is to be seen. The "Black Sea" (a spring variety) is principally cultivated, and its culture fast increasing. Owing to the extreme wetness of the spring, a large portion of this kind of wheat was not sown in many situations before the beginning, and in some places, the middle of June! Although this variety, so well suited in many respects to this country, has been cultivated but a very few years (only three or four we believe), yet we are credibly informed that it is beginning to deteriorate in quality, losing in weight, so that a fresh

importation of seed will ere long become necessary. June 14th: attended a meeting in the court house, at Perth, Bathurst District; Andrew Dickson, Esq., sheriff, presided. Considerable interest was manifested towards the Provincial Association; this and other Societies having gone into considerable expense in importing stock, will not be able to afford much pecuniary assistance this year but we hope such a spirit of enterprise has been awakened as will prove permanently advantageous. In going over the well cultivated farm of Judge Malloch, close to the town of Perth, we observed some excellent sheep and cattle, convenient buildings and promising crops. His Honour informed us that he had employed *guano* as a manure with great effect, but thought it too expensive, having imported it from Scotland. We should be glad to be favoured with the particulars of these experiments. There are many excellent Scotch farmers in this part. The roads, however, are very bad, but there are prospects of improvement.

Throughout the country an impression appears to be gaining ground among the farmers, that more attention should be paid to the breeding of live stock generally, and in some places active measures have been taken to promote that important object. The Kitley Society, Johnstown District, have recently purchased an Ayrshire bull; and we have seen many excellent specimens of grade cattle well adapted to the climate, and the purposes of the dairy. The Americans have been purchasing cows to a great extent in this part of Canada, and we see no good reason why the dairying business might not be as profitably carried on this side of the boundary as the other.

As an instance of the great advantage of improved breeds of cattle, we have much pleasure in laying before our readers the following statement of an experiment made by the Messrs. McDonald, at Gananoque, who obligingly favoured us with the particulars. The six animals were fed and treated exactly alike, from May to the following April, when they were killed. In summer they were kept on good grass, and during winter they had hay and shorts only.

	DEAD WEIGHT.			
	Beef. lbs.	Hide. lbs.	Tallow. lbs.	Total. lbs.
Three four-year old heifers, good specimens of Canadian cattle.	474	51	35	560
	441	48	32	521
	438	46	33	517
Three two-year old about two-third Dur- ham, a cross with na- tives; the first a steer, the two others heifers.	707	94	56	857
	574	67	45	686
	581	78	31	690

PROVINCIAL AGRICULTURAL ASSOCIATION.

It affords us much pleasure to state that all the preliminaries in reference to the forthcoming Exhibition are progressing in the most satisfactory manner. There is every prospect that the Kingston show will come off in a style that will be highly creditable to the country. The contracts for fencing the Show Yard, which will include a space of ten acres, and for erecting the necessary offices and buildings, all of which are upon an ample scale, have already been taken; and active preparations are being made in each of the other departments. Upwards of a thousand pounds (inclusive of the government grant) have already been raised or promised from the Eastern section of the Province only, and we have no doubt that other districts will liberally respond to the urgent call of the Society. The city of Kingston and the Midland District, have already subscribed the munificent sum of six hundred pounds; while Prince Edward and Victoria Districts have each granted 50*l.*, a like sum being expected from the Johnstown District. The government, we are happy to say, have evinced a truly patriotic spirit towards this important national institution, by an annual grant of 250*l.*, besides a special grant of 350*l.* to enable the Society to meet its out-standing liabilities. We hope that this marked and liberal recognition of the importance of the Society by the Legislature, will only tend to increase the desire of all patriotic individuals, as well as of our Agricultural Associations generally, to render all the aid in their power. With united and zealous co-operation, combined with judicious management, this Society cannot fail to confer most important benefits on the country.

For particulars relative to the days and routine of the Exhibition, we refer the reader to our outside page.

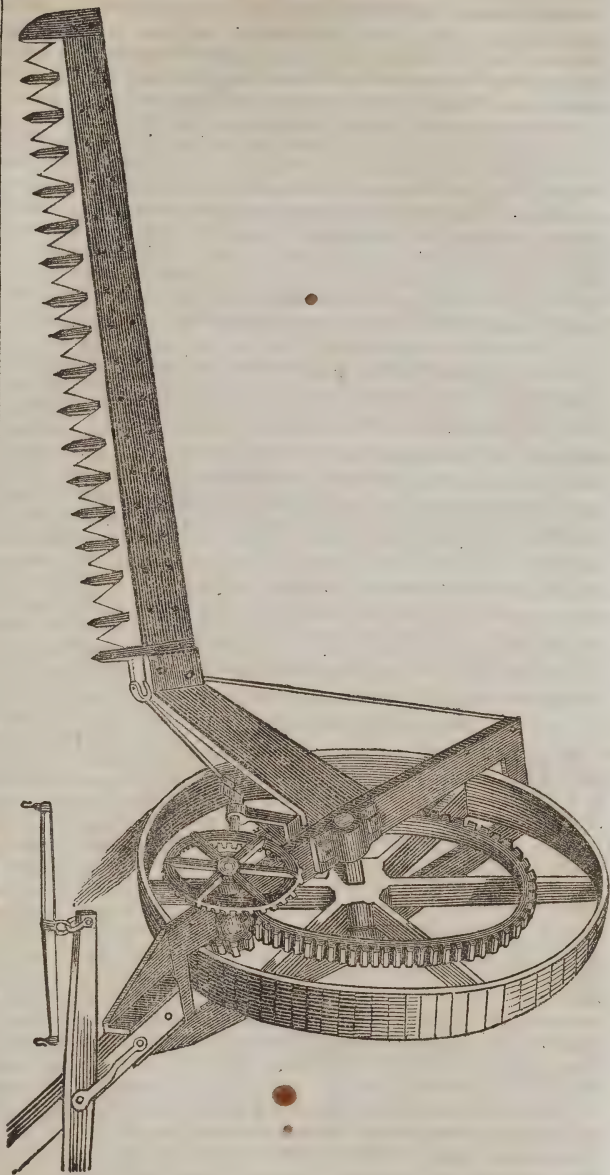
CURE FOR BONE SPAVIN.—Take oil of amber, oil of spike, and spirits of turpentine, equal parts, say four ounces; warm them on some warm ashes with no blaze, and apply them as warm as you can to the spavin by pouring it on and rubbing it in well with the ball of your thumb; (first shave the hair off of the spavin;) this must be repeated twice a day for two days, when if well rubbed, it will become a running sore; wet a sponge with the substance, and apply it twice a day for three days, then stop for three days, and if the spavin has not disappeared, repeat the course three days longer, let the sore heal, wash it with plantain leaf scalded and suds from Castile soap; as soon as the sore is closed, commence rubbing with lard or rank butter, and the spavin will disappear, and the hair will grow in the same colour.

Agriculture, like the leader of Israel, strikes the rock,—the waters flow, and the famished people are satisfied.

MOWING MACHINE.

There are but few kinds of farm labor more severe than mowing. The heat of the weather, at the season when this operation is usually performed, is very great; its intensity being increased by reflection from the mown grass. The air is rendered sultry and exhausting by the heated vapour with which it is loaded while the hay is being cured. In many places it is the custom to use drinks in the hay field which are not adapted to cool the system, or to invigorate and sustain the physical energies under such trying efforts. If in addition to these circumstances—the nature of the operation itself be considered, stretching every muscle, and twisting every joint in a man's anatomy—it will not be denied that the invention of a machine to take the place of the mower and do the work faster and better, is a great desideratum. We fancy the great American orator and statesman Daniel Webster, was of the same opinion when he complained to his father of his scythe hanging so badly. His father's repeated efforts to hang it to please him, proving unsuccessful, he handed it to Daniel in despair, telling him to "hang it to suit himself." The youthful haymaker straightway took his scythe and hung it upon the nearest tree! Whether he thought that mowing hay was not the employment best suited to him, or that the scythe was not the implement best adapted to perform it with, we are not informed. Probably he took both views of the question. One of his countrymen has at last invented a mowing machine, which, with the improvements it has received and will hereafter receive, is destined, we think, to take the place of the crooked scythe, on all large and smooth meadows.

The annexed cut represents one which we saw in operation last fall, at the Buffalo Fair. The ground on which it was tried was quite rough and the grass (clover of a second growth) badly trodden down. Yet this machine, drawn by a span of horses, cut the grass very close, and nearly as



well as it could have been done with a scythe. On a smooth bottom, with the grass standing, we were assured by those who had seen it work, that no mower could do it better. We have not heard whether any of these machines have been introduced into Canada, but we hope to see a specimen at the Kingston Fair, and if possible, such an exhibition of its capabilities as to attract the attention of our farmers. The following description is from a cotemporary:—

"It will be perceived the knives, as in reaping

machines are a simple saw, with teeth about three inches in length, ground sharp, so as to match and form a gang of shears with the steel bars about an inch wide, which project between each of the knives about an inch beyond their points. As the saw or gang of knives are moved alternately to the right and left, by a crank attached to the machinery, the grass in contact with the knives, is, as it were sheared off smooth at the surface of the ground. The machine though wholly of iron, weighs less than 500 lbs. is propelled with ease, and cuts the grass in a close and even manner, and will cut in a perfect manner ten or twelve acres of heavy grass per day, and costs £25."

We have been favoured with two or three communications, among which was the following article, addressed to the Committee of the *Johnstown Agricultural Society*, but never published. In this as in all cases of correspondence we beg our readers to understand that we do not hold ourselves responsible for the opinions of the writers. While we would not insert any thing which we thought might prove injurious to the Farmer's practice without some modification or warning; yet we are always ready to give publicity to such fairly conducted speculations as may tend to awaken curiosity and call forth observation and discussion:

THE WHEAT FLY.

In attempting some remarks on the natural history of the wheat fly, I am not insensible that it is a subject surrounded with a great deal of difficulty. There is no doubt that it is produced by a natural cause. But there is considerable doubt, if the cause could be ascertained, that it would invariably enable us to be successful in the application of a suitable remedy. It may possibly originate in disease arising from the extensive cultivation of wheat. It may take its rise in some peculiarity of the seasons, as it seems to act in concert and contemporaneously with the rust. We might thus indulge in almost endless speculations on the origin of this insect, and still be as far from the real cause from whence it takes its rise, as when we commenced.

The real wheat fly is a very small insect, with an orange colour body, about the size of the full grown larva or worm, which we find inside the spikelets of wheat, at harvest; they have light coloured wings, and when they first make their appearance they are much smaller than when they commence their depredations. They generally make their appearance about the latter part of July, sometimes earlier, as there must be a certain amount of warmth and moisture to enable them to hatch; and I am inclined to think that one or two cold wet seasons would annihilate them completely.

From observation I am induced to believe that the fly commences the work of destruction—if they have then attained to maturity—as soon as the ear appears out of the socket. When the germ of the forthcoming insect is first deposited, it ap-

pears like a small blot scarcely discernible without the aid of a magnifying glass.

If the grain is formed and filled, the deposit can do no possible injury; the worm however is sure to attain its usual size; hence it may be reasonably inferred that the fly seeks the wheat plant as the most suitable place to deposit its young, and that the maggot does not prey upon the kernel for a subsistence, as many suppose. The worms are washed out with the rain and also rattled out on the ground in harvesting, and by instinct make their way into the earth, where they remain until warmed into existence the forthcoming season, when they emerge from the chrysalis stage to the ordinary derelict of our wheat fields.

This fly is first spoken of as appearing in England in 1795, and afterwards in 1828, and producing the most severe losses in the crops. It is described, but erroneously, as "a small black fly hovering over the wheat fields in immense swarms." On the contrary I am inclined to think it is never seen in the air, but remains on or near the ground until near sunset, when it ascends to the head of the wheat.

So much for the natural history of the insect: the remedy for its depredations is the grand desideratum, worthy of some effort to accomplish, and I believe the case is not altogether as hopeless as many suppose, as far as it respects winter wheat at least. The application of any remedy with a view to destroy the insect I consider quite fallacious; accordingly the old maxim, an ounce of preventive is worth more than a pound of cure, will here apply to perfection. The remedy and preventive, is to be found in an improved method of cultivation, and perhaps even with this we may not be as successful as we were a few years since. For a few years previously to the appearance of the insect and the rust, our farms brought forth wheat almost spontaneously. But the time has passed with us when a slovenly method of cultivating will insure to the farmer a return for the labour thus bestowed. In the first place a system of draining must be carried into operation. Stagnant water uniformly retards the progress of vegetation. Wheat kept back by wet in the spring will most assuredly be assailed with both the rust and the insect. No matter how dry the land is, we must still depend upon that Being, of whom the Poet says:

"Tis He prepares the fruitful rain,
"Nor lets the drops descend in vain."

The importance of draining previous to the commencement of any other improvement in agriculture, being acknowledged by every cultivator of the soil, it is of the greatest importance that these undertakings should be conducted on principles which will insure complete and permanent success, and the full advantage of this primary improvement can only be obtained when it is well done. It is indeed the basis of all improvement of land.

While on this subject, I would wish to impress on the farmer the absolute necessity of due preparation of the soil for seed wheat. Superfluous moisture is undoubtedly one of the greatest obstructions to vegetation which a well ordered husbandry

has to overcome. Dampness of the soil not only creates a great deal of trouble in the management, but it prevents the coming up of the finer plants, as well as their ripening. Water-sick arable lands, seldom produce heavy grain in the most favourable seasons. Therefore it is unquestionably one of the agriculturist's first objects to remove all superfluous moisture from the soil, if he expects to reap a profitable crop. I am induced to dwell more at length on the subject of draining, being convinced that the farmer may more frequently attribute a failure in the wheat crops to coldness and dampness of the soil through the influence of superfluous moisture, by which the wheat is kept back in the spring, than to all other causes put together.

The next thing to be taken into consideration is the period of sowing. And I would suggest that it is of the last importance that wheat should be *sown early*. Theory as well as experience is certainly in favour of early sowing, because it gives time for the roots of the grain to establish themselves before winter, and experience proves that grain early sown throws up more lateral stems, than that which is sown late. Wheat sown in time to establish a strong root is not so liable to be thrown out of the ground by frost in the spring, and when sown on elevated land will be profitably forward in time of harvest. And when it is to be considered that early maturity is the grand object to be attained in order to elude the period of the operations of the wheat fly, the paramount importance of early sowing will be duly estimated.

Products of much value to man can only be obtained by corresponding degrees of labour, and with regard to the culture of wheat, much depends on the preparation of the soil, the choice and preparation of the seed, and the time and different modes of sowing it. Our farmers will see the necessity of increased labour and expense of procuring the best and earliest variety of seed. When practicable, seed wheat should be selected from some fine crop of the *preceding year*, which shall have ripened thoroughly and been well preserved. We can scarcely anticipate at present the advantages that will most assuredly result from a well directed effort to procure an early variety of seed. The farmer will find that winter wheat is a much surer dependence than spring wheat. The few unpropitious seasons which have passed, the expectations of the farmer have been blasted as much from the effect of rust, as from the depredations of the insect, and we may reasonably expect more favourable seasons in this respect. Indeed the farmers begin to anticipate this, and a much greater breadth of land will be sown this season than the last.

More uncertainty exists relative to spring wheat; the depredations of the fly can only be evaded by late sowing. In the neighbourhood of the writer, the bearded Black Sea wheat has been cultivated with some success, but not uniformly so; in some cases the injury from the fly has been serious ruin in fields sown contemporaneously with the more successful. Black Sea wheat is not proof against the rust, as has been supposed, as the experience of the writer will testify. There is a much wider range for the selection of seed wheat than is generally supposed. By a report of the Highland Agricultural Society of Scotland, it appears there are

eighty varieties of wheat, "many of which possess superior qualities, so diversified, however, as to afford ample means of selection for sowing on strong or light soils,—in autumn or spring on low or elevated situations, while some of them are suited for greater heights than any at which this species of grain has hitherto been cultivated in Britain." The different kinds of wheat are, like all other plants, modified by circumstances of climate, soil, and cultivation; and winter wheat, by being sown in the spring, from a sort of instinctive tendency of plants to accommodate themselves to their situation, will after one or more sowings become summer wheat, and ripen the same season in which it is sown. The principal distinctions among wheats are into red and white kinds, and into thin or woolly chaffed or otherwise bald or bearded. The white and thin skinned are preferred for bread, and I believe the beardless wheats are much the most prolific, but more obnoxious to the attacks of the insect, and injury by mildew. It would be well worth the while for those interested in the success of agriculture, to be at some pains to procure an early variety of beardless winter wheat, as the same bulk in straw will yield at least from twenty five to thirty per cent more of wheat. The diseases of wheat may be hereditary; and as in animals, they may become aggravated in successive generations, when propagated continually from the same stock, in the same situation; therefore the best cultivators recommend an occasional change of seed. It however appears from the Report above referred to, that Captain Hunter of Tynefield, East Lothian, produced the same variety for sixty years on the same farm without change of seed, weighing from 65 to 65 1-2 per bushel.

IMPORTANCE OF CAREFULLY PREPARING A SUMMER-FALLOW FOR FALL WHEAT.

For the Canadian Agriculturist.

It is no more than natural that the farmer should manifest the liveliest interest in the production of that crop which is of the greatest value. Wheat, the staple of Canada, has thus far deservedly stood best in his estimation, and is likely for some time yet to maintain that ascendancy, though the average yield for the last few years has not been without its discouraging features. Rust seems to be the obstacle most dreaded in the way of a profitable return, and though it is too true that no effectual remedy has yet been discovered by which it can be prevented; still there is no doubt that a careful preparation of the land before the seed is sown may go far to lessen its consequences. We have learned from experience that late ripened grain, or that growing on cold wet soil, is most liable to this disease.

The most common complaint among farmers is that their land after being summer fallowed is too fine. That the furrows run together when ploughed for sowing to such an extent, that it is difficult to get the seed covered a proper depth, and the tender places are therefore exposed to the severe action of the frost during the ensuing winter and spring, when, if it is not destroyed altogether, it is kept back several weeks. The grass and weeds taking advantage of this backwardness, the wheat is unable to recover its original vigor, even though

the land be rich, and as a natural consequence ripens late, and is most likely struck with the rust.

Land is sometimes rendered so poor from constant cropping, that it becomes saturated to that extent from the melting snow and the rains that follow in the spring of the year, that a whole field may not unfrequently be seen, one bed of thin mortar, and while in this state the delicate plant is raised to the tip of its roots by the severe night frosts. Now such results may be prevented in a great measure by careful summer-fallowing. Instead of ploughing a summer-fallow only twice, as many do, it should be ploughed three or four times in order effectually to kill the weeds and expose the soil to the free action of the atmosphere. During a fallow, says Liebig, a quantity of ammonia is collected from the atmosphere, potash disengaged from its combinations, and a certain quantity of the alkalies rendered capable of being appropriated by plants. Now no matter how much some of us may be disposed to question the truth of many theories in agriculture, practically we do know that land properly fallowed is rendered much more productive.

If we have barn-yard manure to apply to our fields, there is no better way than to work it well into a summer fallow, plough it well under as soon as it is taken to the field, before it has had time to lose any of its richness by evaporation. A summer fallow, to be really of service to the land, should be ploughed for the first time either the fall previous to sowing, or as early as possible in the spring. If a fallow is not broken up until the heat of summer, it is not effectually acted upon either by the rain or the atmosphere; and the roots of grass, and seeds of various weeds, apparently destroyed, will preserve sufficient vitality to make their appearance when little looked for among the wheat.

If these observations are correct (and they are not without the force of some experience), a fallow for wheat should not only be ploughed often but at proper periods, and it will acquire consistency and firmness; apply a reasonable quantity of manure, drain sufficient to take off at least, all the surface water; sow rather early than otherwise, and you are almost sure of a good crop. When the wheat plant stands in a comparatively dry and rich soil, it will grow vigorously and suffer little from the ordinary severity of the seasons.

THE POTATO.—It is evident that the potato is too precarious a crop to be relied on as a staple article of food. It must descend to the rank of a garden luxury; but what shall we substitute for it? How are the millions in these islands who have hitherto subsisted chiefly on that root to be fed without it? The answer is thus far obvious, that they must be fed either with imported food or with increased produce raised from our own soil by means of improved cultivation. That our own soil is capable, under an improved system, of yielding such an increased quantity of grain and animal food as would more than compensate for the loss of the potato, may be treated as an admitted fact; and if that loss shall stimulate such improved cultivation, it may be hailed as one of the greatest blessings which could have been bestowed upon us. From the potato have flowed the larger portion of those evils which are now desolating Ireland. The same evils would have resulted in England from the adoption of the potato as the sole food

of the labouring classes, a state of things to which we were rapidly tending. In England, the evil has been arrested before it had reached its height, by that mysterious visitation which baffles the skill and eludes the science of man, and by which a wise and good Providence is working out his designs. In Ireland the change, though good will ultimately arise from it, is attended with intense present suffering, aggravated and prolonged by the desperate fidelity with which the population of all classes cling to that treacherous root.

We have before us a letter from a correspondent to whom we can rely, who says, "In Donegal, ever available acre is planted with potatoes. In Roscommon the old pasture is being broken up, and let on the con-acre system." A daily contemporary has stated on the authority of Lord Clarendon's Agricultural Instructors, that in other districts the small farmers are pledging their last resources to plant as large a breadth as possible with potatoes; and that when asked what will be their position in the event of another failure of that crop, the answer is, "*In that case, we can do nothing but lie down and die!*" When it was suggested to them that a better and safer return from the land might be obtained by means of oats, beans, peas, and turnips, the reply was that they had no seed. If seed were given them, they would try those crops. As if the same resources which procured the high-priced potato sets would not have procured the seed of other crops, if there had been the inclination and the energy to resort to them. This is the old cry, the impossibility of cropping the land without the assistance of the Government or some other extraneous aid, of which the inspecting officers under the Temporary Relief Act heard so much during the famine of 1846-7, a cry which proved to be utterly unfounded when it was seen that such aid was not forthcoming.

If the cultivators of the Irish soil will persist in gambling in potatoes, and if the landowners will make no effort to restrain it, and to introduce a safer and more rational system of cultivation, both parties must abide by the consequences. The former must not be surprised if they are overwhelmed with poor's-rates, nor the latter if their estates pass into other hands. One thing is certain, that to pay the stakes for them in case of failure by grants from the Imperial Treasury, tends only to encourage this recklessness, and that the sooner all classes in Ireland are convinced that they will be left to their own resources, the sooner they will learn the necessity of self-exertion.

In that part of England which comes under our observation, we are happy to observe among the cottagers a greater disinclination for the potato culture this season, and a more extensive planting of beans and peas. These, however, and more particularly the former, are mere summer substitutes. A winter substitute for the potato is still a desideratum. The best we have seen on the table is the Haricot or white kidney bean. Well boiled, a little butter stirred among them while hot, and sprinkled with pepper, they form a delicious dish. They have been hitherto chiefly imported from France, and cost about 6s. the bushel. We are not recommending the cultivation of them in Ireland or the north of England. We fear they are too tender for field culture, even in our southern counties, but in the cottage garden wherever French beans can be cultivated for their green pods there seems no reason against their cultivation for their ripe seeds. They have the advantage of being a crop which does not occupy the ground long, and they can be easily stored. It is even yet not too late to plant them and we would urge all who have any influence with the cultivators of cottage gardens to induce the trial of experiments in cultivating them on a small scale, and to introduce a taste for them as an article of food, by

distributing some of the imported Haricots, with directions for cooking them.—*Agricultural Gazette.*

THE HISTORY OF AGRICULTURE.—The first of a course of three lectures on this subject was delivered at the Royal Institution, on Monday afternoon last, by Chandos Wren Hoskyns, Esq., B.A. F.S.A.: its subject was the ancient period of agricultural history.—Dr. Fleming, in introducing Mr. Hoskyns, remarked upon the desire which was felt by the council of the institution to supply lectures which should form a curriculum of education. In such a series they must, of course, include agriculture; but a difficulty here presented itself in the fact that so few distinguished men had devoted themselves to the study of this science. This was overcome by a gentleman of the highest possible authority naming to the council Mr. Hoskyns, and at the same time intimating his opinion that no other gentleman equally competent could be found in this country. Mr. Hoskyns was communicated with, and he at once proposed gratuitously to give a course of lectures upon the history of agriculture. He (Dr. Fleming) conceived, therefore, that Mr. Hoskyns was eminently entitled to their gratitude.—(Applause.)

The lecturer said that, surrounded as we were by the arts which accompanied the growth of civilization, there was none to which our attention might more naturally turn than that whose subject was the supply of our first physical want. The history of the productions of the soil was interwoven with man's progress in every other art, and was fundamentally connected with his well-being in every respect. While we were familiar with the manœuvring of the Greek phalanx, and of the Roman legion, we were in the dark as to their simplest art; while the sword and the shield had descended to us in minute descriptions, the form of the plough, the spade, and the loom, might be looked for almost in vain; and we should possess no idea of them but for some accidental phrase in a writer, some half-effaced sculpture, or the impression on a coin. Nothing marked more strongly an epoch in any art, than the awakening of an interest as to the particulars which might be gathered of its early history. There was no human pursuit which could be said to have reached a later state of development, without having been assisted by the helping hand of science, than agriculture. The great improvement in the art of late years suggested the inquiry why it was so long stationary; and some answer to this question might perhaps be found in the very importance of the subject itself; for all natural laws seemed to testify to the slow growth of whatever was most truly and permanently valuable. The history of agriculture was in some sort the history of civilization; and in the labours of husbandry we recognized the humble but persevering antagonist of those elements which had ever presented man to the student and the philosopher as the one great disturbing agent in otherwise tranquil nature. At the very outset, therefore, of a history like this, we must cast off all expectation of meeting with much of distinct or purposed narrative, and from a wide and varied field of research, we must be content to gather such indications as we could. The task we had to perform was to convert scattered links in a chain, as well as the scanty materials would allow, and to throw upon the series such connection as may be derived from the great privilege we possessed of viewing the subject from the vantage ground of after knowledge. We had an illustration of the kind of evidence to which he referred, in the history of our race given in the Bible, where we were told that Abel was a keeper of sheep, and that Cain tilled the ground. Here were the two great branches of agricultural science as they existed at the present day—agriculture proper, or the cultivation of the soil, and the secondary branch of the feeding of cattle. Mr. Hoskyns

then read the description of the Egyptian agriculture given by the younger Pliny; and said we could not too much admire the arrangement by which the simple overflow of the Nile became an inducement to a regular system of husbandry and planting, bringing with it the necessity for a fresh division of land after each inundation; and as the study of geometry arose from the desire of each to possess his own land, Egypt was thus rendered the parent of agricultural, geometrical, and, ultimately, of astronomical science. After referring to the frequent scarcities recorded as having taken place in the east, and also to the condition of the nomade and of the pastoral life, the lecturer said that wherever the cultivation of the soil was little practised, the mechanical arts were but little understood. Flocks of sheep afforded the means of supplying the wants of men, for this animal easily adapted itself to different climates, and thrived upon the shortest and most scanty pasture. The practice of agriculture in earlier times, by supplying nations with a greater amount of wealth than their own wants required, rendered them not only permanent but powerful also. Peculiar interest had always been attached to the most ancient modes of constructing the plough. Mr. Hoskyns then referred to the representations of the plough, which were found in the Egyptian hieroglyphica, and said that the instrument there pictured was no doubt a substitute for a more simple one which had preceded it. Inquiry seemed to prove that the spade, as an instrument of hand labour, must yield in antiquity to the hoe. Mr. Hoskyns explained the three gradations of hieroglyphic writing,—the pictorial, the symbolic, and the phonetic—and pointed out, that the first letter of the word used by the Egyptians to signify plough had become the first letter of modern alphabets. The next agricultural nation of antiquity was Greece. Overflowing as the history of this country was with records of arts which delighted the fancy of men, Greece was almost silent about agriculture; and we looked in vain for the scanty notices that would have afforded some clue to their progress in an art which to the Grecian mind must have appeared so necessary. Mr. Hoskyns referred to the testimony of Herodotus and Thucydides as to the soil and capabilities of Greece; and afterwards pointed out the change which had taken place in the climate of Sparta, owing to the neglect of the extensive system of draining at one time pursued there. Traces of ancient cities were to be found in the valleys now rendered uninhabitable by the neglect of drainage; and instead of nurturing the vigorous and healthy race of whom we read, one sickly race succeeded another. The agriculture of Rome occupied a much wider field in history. From the very foundation of the state, amidst much that was fabulous, we learned one fact, which left its traces for many centuries afterwards,—that the assignment of a certain portion of land to every citizen was the first work of the state. Agriculture was peculiarly suited to the Roman character, because its requirements and its philosophy were of all callings the most practical. Nothing more clearly proved the high estimation in which agriculture was held among Romans, than the fact, that from its terms many of the greatest men derived their names; and the practical work of cultivating the soil appeared to have been as naturally the resource of Roman senators, when relieved from their legislative duties, as were the moors of Scotland to the members of a more modern assembly. The Romans were characterised by the great exactness of their modes of cultivation, and all the ordinary details were carried out with great nicety. In their ploughing, the Romans made their furrows straight to perfection; in making their roads in conquered lands, they allowed them to be turned neither by mountain nor swamp; and this straight progress was the secret to their success in agriculture and in war. There was

sufficient evidence to prove that Rome had possessed an agricultural literature which had been equalled by no other country. In conclusion, Mr. Hoskyns referred to the works of several of the Roman writers on agriculture, and quoted the advice given by Cato to young farmers.—*Manchester Guardian*.

CABBAGE TURNIP, OR KHOL RABI.—In Europe, and in some seed catalogues in this country, this plant is called *turnip-rooted cabbage*; but this is erroneous, let the authority for the name be what it may, for it is a turnip, and not a cabbage; but it may with propriety be called a *cabbage turnip*, as it has a cabbage taste. In form, growth, &c., it is in reality a turnip.

There are two kinds of the *Khol Rabi*, one with the turnip below, or in the ground, like a ruta-baga; the other has the turnip above the ground, resting on a stem similar to a cabbage stump, only very short, the turnip being almost on the ground. In this kind the leaves come out on different parts of the turnip, but mostly on the upper side. The most common, and the better variety, is that below the ground.

The cabbage turnip is sowed at the same time, cultivated in the same way, and used for the same purposes as the ruta-baga. For the table, it is whiter, milder, and sweeter, or has less of the peculiar strong turnip flavour, and resembles the old French turnip in quality, but is very little whiter, and less liable to become corky.

The cabbage turnip keeps better than ruta-baga, and is less liable to injury from frost. In Maine, where the winters are less liable to a change in temperature, we used to leave these turnips out in the fall, and in the spring they were in as fine condition as parsnips in the same ground. In this state, a few years ago, some friends, to whom we gave some seed, said that they kept perfectly well out doors. But we left some out for trial, winter before last,—a very variable season: sometimes heavy rains and the reverse,—and the turnips were destroyed by frequent freezing and thawing.

For cattle, the cabbage turnip is excellent, and we never perceived any unpleasant taste in milk, from feeding cows freely with them. It yields largely, but it has many roots or prongs, which is an objection. For stock or for the table, we prefer the cabbage turnip to the ruta-baga. We have sold them to many of our neighbors, for a few years, who prefer them for the table to any other turnip, from November to May or June. Yet we recommend them for trial only, as every one may not give them the preference. Sow them by the side of the ruta-baga, and judge of their comparative value.

We raised a fine lot of seed, last year, of the genuine below, ground variety; and those who would try it, may obtain some in the seed room of Messrs. Ruggles, Nourse, Mason, & Co., adjoining our office, where specimens of the root may be seen.—*New England Farmer*.

AGRICULTURE IN MAINE.—In the late message Gov. Dana to the legislature of Maine, we find the following sensible remarks on the importance of agricultural education, and the propriety of exempting a suitable amount of the debtor's property from the power of the creditor, instead of specific articles. We trust that so valuable suggestions will be duly appreciated by the intelligent body to whose action they are submitted.

The products of agricultural labor are undoubtedly of greater value than the combined products of all other labor in the state; and yet that pursuit attracts less of general attention than any other. From its unobtrusiveness it has allowed itself to be nearly overlooked, although the great interest of the state. The farmer sows his seed, watches its springing and maturity, reaps his harvest, and enjoys its fruits in quiet and con-

tentment, asking no protection or legislation. But his interest should not be neglected because he makes no clamor in the halls of legislation. I presume it would not be doubted, that the general application of science to agriculture throughout the state, would double our agricultural products, with but a slight increase of labor. Such an addition to the productions, resources, and wealth of the state, is an object worthy the highest solicitude, and should command your earnest consideration. But with our present means of education, little advance can be made towards its accomplishment. There is not in the state, and probably not in New England, an institution where a practical, scientific agricultural education can be obtained. Three fourths of our population are farmers; three fourths of the rising generation will be farmers; and yet there is no opportunity for one, of all this number, to obtain an education adapted to, and in aid of, his vocation. True, we have our high schools, academies, and colleges,—many of them liberally endowed by the state,—but they all fail to give him an appropriate education; for, instead of fitting him for his destined pursuit, and rendering it pleasing to him, his course of studies and the associations and influences around him, all tend to give him a distaste for it, and to invite to other professions and callings, where he will be far less useful to himself and the community. If, then, the object of education is to fit man for the duties of life, a large majority of our population have no opportunity to obtain it.

In my annual message to the legislature of 1847, I suggested the establishment of an agricultural and teacher's seminary, under the direction of the board of education, and proposed that, when its finances would permit, the state should support, at that seminary, a small given number of scholars from each county, to be selected by their respective boards of school committees, as a reward of merit and proficiency. The chief design of this feature of my suggestion, was to give a stimulus to the interest of both parents and children, in our public schools; but it would probably be attended with too much expense for the present condition of the treasury. An agricultural school, divested of this more expensive feature, as a model, and as a commencement of a system of agricultural schools, is an immediate want, and within our immediate means. The interest of the permanent school fund, which is still unappropriated, is more than sufficient for that purpose; and if, as I have already suggested, the proceeds of the reserved lands should be added to this fund, the interest of both combined would, besides sustaining such a school, furnish the means for increased facilities for the education of teachers, either by the establishment of normal schools, or by prolonging the sessions of our interests.

The policy of exempting a portion of the property of the debtor from attachment, for the double purpose of enabling him to supply the necessities of himself and family, and of furnishing him with facilities wherewith he may ultimately relieve himself from his debts, has ever been recognized by our laws, and is both humane and wise. But I am convinced that the exemption of a fixed amount of property, of such description as the debtor might select, whether personal or real, instead of the list of specific articles now exempted, would be advantageous both to debtor and creditor; because each individual debtor could then retain the property best adapted to his circumstances, and calculated to afford the most aid in accomplishing the objects for which the exemption was made. Under the present law, it may often occur, that the property retained, although the amount may be large, is of little benefit to the debtor retaining it; whereas, if a much less value were secured to him, in precisely the property which his situation required, the ends of protection would be more nearly attained. But another important objection to our exemption of specific articles is, that no real estate

is included. If the present exemption of personal property does not conflict with the rights of the creditor, the exemption of the same value, in either personal or real estate, surely could not; while, at the same time, it would be far more useful to the debtor. He is now allowed the products of a farm, tools, horses, and oxen to cultivate it, but no farm; thus encouraged to obtain the implements of husbandry, but forced to use them upon the farm of another; induced to assume the relation of a tenant, while the true interests, alike of the debtor, creditor, and the state, would invite him to become a freeholder.

BUCKWHEAT OR POLYGONUM FAGOPYRUM.—Buckwheat is said to be a native of Persia, and is usually sown on poor land, although, like other cultivated plants, it does best on a good soil with good culture. Its blossoms yield considerable food for bees, although the honey thus obtained is inferior to that made from clover. Buckwheat meal or flour is much used in some sections of the United States for making griddle cakes. The seeds of this plant contain fifty per cent. of starch, and one and one half per cent. of earthy matter. It is often sown and the crop ploughed in, to fertilize poor land. From one to two bushels of seed are put on.

BUCKWHEAT WITHOUT GRIT.—Did any person, who eats buckwheat cakes, ever have the good fortune to get any containing not a particle of grit? A method not generally known was lately stated to us by a practical farmer, who says that buckwheat raised in this way is entirely free from the difficulty.

The buckwheat is sown at the usual time; but before harrowing, a bushel of rye is sown with it to the acre: they both come up together, and the buckwheat, being much the most rapid in growth, soon obtains the ascendancy, the rye only forming a smooth, green carpet beneath, which completely prevents the dashing of the grit of the soil by rain upon the buckwheat, when it is cut, and otherwise keeps it clean. After the crop of buckwheat is removed, the rye obtains sufficient growth before winter, and the next season affords a good crop of itself. Thus the buckwheat is protected, and two crops obtained from a single seeding.—*Penn. Cultivator.*

BLOODY MILK.—Messrs. Editors: When I was quite small, my mother had a cow that gave bloody milk. I had an uncle who was in the habit of doctoring his own cows, and occasionally his neighbors', if requested, with pretty good success. He was sent for. He inquired on which side the cow gave bloody milk. I went to the stable with him to see the operation. He bled the cow under the belly, on the side from which she gave the bloody milk. He directed that bittersweet ointment should be freely used about the udder for a few days, and said the cow would give "no more bloody milk." I state this to show that he had confidence in the remedy. Last spring, I had a heifer that gave bloody milk. She had a fine calf by a Durham bull, and bore the marks of a good cow, so much so that I refused the highest price of good cows for her before she had her calf. I recalled to mind, as near as I could, the process by which I had seen a cow cured of the same disease, when a lad. I tied a cord around her body, raised the vein by the help of a twist, and drew probably three quarts of blood from the vein leading to the diseased side of the udder. I procured some roots of bittersweet, the bark of which was boiled in water until the strength was extracted, then strained, and the liquor simmered with lard until the water was nearly evaporated: this ointment was used freely by rubbing it well over and about the udder with the hand three times a

day, after milking, for several days. I do not say that she gave "no more bloody milk." By letting the stripings remain in a vessel by itself for twelve or twenty-four hours, and carefully pouring off the milk, it was found that a slight sediment had been precipitated containing bloody matter, which continued for four or five days after the bleeding operation was performed; since which time not the slightest trace of blood has been discovered in the milk, and she has fully answered my expectations. Every body knows, or ought to know, bittersweet. It is found in the thickets, and consists of a woody vine, which runs spirally up the bushes or small trees, and branches with the top of the tree: it has a long narrow leaf, and bears clusters of berries: it blossoms in the spring: in summer, the berries are green: in autumn, a beautiful yellow; and in the winter, red. The root is of a golden yellow color, and its taste, as its name indicates, bittersweet.

Lee Co., Iowa, 1849.

TORPEDO.

P. S. Would not this disease have been likely to have terminated in what is called the garget in the udder had it not been attended to in season? T.

—*Prairie Farmer.*

REMARKS BY THE EDITOR NEW ENGLAND FARMER.—Every body does not know the "bittersweet," though he ought to know it, as the writer of the foregoing article observes. We knew a case of a physician choosing in the fields a poisonous plant for the bittersweet; and he and his friend, who chewed it by way of trial, found it bitter, but not sweet. Bittersweet, or woody nightshade, (*Solanum nigra*), a poisonous plant.

Bittersweet has lower leaves heart-shaped; flowers purple; berries oval, bright red at maturity; common in low grounds, and beside brooks; flowers in July.

Black nightshade has an erect stem; leaves ovate; flowers white; berries round, black. It grows among rubbish; is supposed to be imported from Europe. If this be correct it is probably found only in some sections of the country that have been long settled.

COST OF GROWING WHEAT IN THE UNITED STATES.

—Nothing can better serve to convey to the reader's mind an adequate idea of the exuberance of the Mississippi valley, than the ease with which, the little expense at which, and the abundance in which, wheat can be produced in its upper and grain-growing section. Throughout its entire length and breadth, Indian corn seems to be almost a spontaneous production; the difficulty seemingly being, not to produce it, but to prevent it from growing in too great abundance. The Farmer in the valley is remunerated if he gets 10c. or about 6d. sterling a-bushel for it on his farm. For want of a greater domestic and foreign demand, a great portion of the enormous quantity annually raised of it rots upon the ground. Wheat, of course, requires more attention to be bestowed upon it, and more outlay to produce it. But it is astonishing how little labour and cost it requires to draw exuberant crops from the rich prairie lands. The following estimate of the cost of raising wheat, for the first time, from prairie land, I procured from a gentleman in Washington, himself a practical Farmer in the west, and, at the time, a member of Congress for a western constituency:—

For ploughing an acre of sod	\$2 0
Seed, - - - - -	1 0
Sowing seed, - - - - -	1 0
Harvesting, - - - - -	1 25
Threshing, - - - - -	1 75

Total expense, - - - - - \$7 0

Here then we have seven dollars, or about 29s. 2d. sterling covering the whole expense of producing an acre of wheat in portions of the valley. And this is

the cost at which the prairie can be cultivated for the first time. In subsequent years it is diminished; as, after the soil is once turned up, the land can be ploughed for one dollar an acre. This reduces the aggregate cost to 25s. per acre. But it may be supposed that, as the husbandry is rude, the yield will not be very abundant. The average yield of good prairie land, when properly tilled, is about thirty-five bushels per acre; but as it is generally farmed it yields an average of thirty bushels. This gives the cost of production at very nearly 1s. the first year, and at 10d. the subsequent years. The American is somewhat smaller than the English bushel; but making ample allowance for this difference, 10s. sterling may be assumed as the cost of producing a quarter of wheat in most portions of the Mississippi valley where the land is prairie land. Of course when it is forest land the cost of clearing will enhance that of production. It therefore follows, that all that the prairie Farmer can get over 10s. sterling per qr. for his wheat on his farm is clear profit to him. Compare this with 84s., 64s., and 56s. as the successively assumed remunerating prices in this country.—*Mackay's Travels in the United States in 1846-7.*

BENEFITS OF SALT AS MANURE.—We have recently been perusing several European articles, detailing experiments made with salt as manure, and from them we have made the following brief synopsis of its utility:—

It attracts the humid vapors and repels frost, and thus assists in keeping the land moist in dry weather, and warm in cold. It keeps every thing in the soil in a soft and soluble state, and assists to digest and prepare the food for vegetable nutrition. It destroys many kinds of vermin and weeds, and usually increases the amount of the crop one fourth to one third; strengthens the growth of every thing to which it is applied, and brings all crops earlier to the harvest. It generally adds from five to seven bushels per acre to the yield of wheat used in the most moderate quantity, and in all kinds of grain makes more ear and less straw. Mr. George Sinclair obtained at Woburn, on plots of thirty-six square feet, at the rate of seventy to ninety-five bushels of wheat per acre, by the use of salt mixed with other manures. It is found equally beneficial to pasture as well as root crops, sweetening all vegetation, and making it more wholesome for both man and beast. It is a great safeguard against blast, rust, mildew, and indeed all the diseases of grain and vegetables.

Salt is inoperative applied near the sea-shore, where salt water spray is already in excess on the land; but every where else it is beneficial. It may be used at the rate of five or forty bushels per acre, though ten or twenty bushels are better. It can be sown broad-cast on the land, or be incorporated in the manure or compost heap. Mr. Prideaux informs us, that mixed with lime and its compounds, it undergoes decomposition, producing soda or its combination with carbonic acid, or with humus; all more powerful digesters and feeders than salt itself; and the muriate of lime, which has the strongest attraction for moisture of almost any thing known. Salt and lime work vegetable matters to decay quicker than salt alone. With gypsum it will supply soda and sulphuric acid cheaper than any other material, besides the muriate of lime, so valuable for its moistening quality.—*American Agriculturist.*

ROOKS.—I take the liberty of predicting that in the course of a few years the farmers of this country will be unable to grow corn crops at all! You must not be startled at a supposition so bold as this. I will premise my explanation by a short statement made in works

upon Natural History upon the very best authority. Many years ago, the Coffee plants in the island of Madagascar were attacked by the grackle, a well known bird on the African coast. The grackle is an insect feeder, but having used up the supply, it betook itself in pure necessity to Coffee. An edict was speedily issued and carried into effect, for the annihilation of grackles, and every bird on the island was destroyed. All went on very well for a year or two; when lo and behold, the insects and their larvæ having the field to themselves began to make sad havoc upon the Coffee plants. What was to be done? There was no alternative but that of bringing back the grackle, which was in due season imported. The Coffee planters had however gained something by experience, and they resolved to profit by the same; they managed to keep the grackle within bounds, and they well knew that he would do the same by the insects. And they were right. By preserving a *juste milieu* doctrine between the two, they were enabled to grow Coffee. Now I apprehend the farmers in the present day are much in the same position as the Coffee planters of Madagascar. There has been for some time a system practiced in this neighbourhood of poisoning birds by wholesale; thousands upon thousands have thus been destroyed, and the system continues. Can anything, I ask, be more absurd and irrational; I had almost said stupid, than this abominable practice. I will say nothing about the beauty and harmony of living nature, I will not whisper a syllable of the goodness and beneficence and wisdom of its great author, for I know from experience, that against prejudice in agricultural districts such arguments have no weight; neither will I attempt to picture the horror with which I have witnessed this familiarity with poison spreading like an evil pestilence among the beautiful of God's works. But this I will say, that if the farmers of England run blindly and willfully into the proved and fatal error of the Coffee planters of Madagascar, if they permit the grub and the wireworm to destroy the crops of this country—and this they will do most assuredly if they annihilate insect feeders—they will not only effect their own ruin, but they will inevitably cause a great national calamity.—*Agricultural Gazette.*

GREAT FARM.—The United States Patent Office Report says, "One of the greatest dairies in our country is that of Colonel Meacham, of Pulaski, N. Y. His farm consists of one thousand acres, three hundred of which are devoted to grass; and he keeps one hundred head of cattle and ninety-seven cows. In one year he made thirty thousand pounds of cheese, twenty thousand of which sold at one time, in New York, for from six and a half to seven cents per pound. He feeds his cows mostly on hay and carrots; of the latter, he raises two thousand bushels, and gives each cow half a bushel per day. And besides the benefit derived from his grass for his stock, he gathers not less than three hundred bushels of grass seed."

CHOKING OF SUBTERRANEAN DRAINS.—A short time since, Mr. Hawkins, of Assington, a gentleman occupied in farming and professionally engaged in land-surveying and draining, brought me a slimy substance which he described as collecting within and choking up drains in certain localities. He referred me to Mr. Parkes' "Essays on Land Draining," p. 66, for an account of this substance and its analysis by Mr. R. Phillips. Mr. Parkes considers it to be an aggregation of peroxide of iron precipitated from the chemical solu-

tion of the protoxide united with carbonic acid in the water. I immediately told Mr. Hawkins that I was satisfied this matter was of vegetable origin, and I showed him, under the microscope, that it was composed of extremely delicate confervoid filaments. It was evidently some minute fresh-water Alga. I forwarded a fragment to Mr. Thwaites, of Bristol, whose researches and discoveries among the lower groups of this family of plants have recently been shedding much light upon their physiology. He informs me that it is a nondescript species, with which he has been acquainted for the last two years, and had assigned to it the name of *Cathetocladius Ralfsii*, having first received it from Mr. Ralfs, the author of a recent most admirable volume on our British Desmidiæ, one of the lowest and strangest of the groups of the same family of plants. After having carefully washed a mass of the *Cathetocladius*, to get rid of the sand with which it was mixed up, I dried and burnt it in an open crucible. It lost 25 per cent. of organic matter, and left a residual ash of 75 per cent. This ash was of a dull red, and apparently consists almost entirely of peroxide of iron and silica. So many of the lower Algæ secrete silica, that it does not seem to be at all improbable that considerable accumulations of this mineral and peroxide of iron might originate within drains entirely from the decay of these plants, however carefully all extraneous matters were prevented from entering them. Strata of considerable thickness have been formed in some places from the siliceous cases of certain microscopic plants. But still, in the absence of experiment, or accurate observations to the contrary, I should be inclined to think that the evils complained of might be avoided if sand and other matters were carefully excluded from finding their way into the drains. For the plant itself would periodically decay, and I should suppose it would then be readily carried off by the current, if there were no foreign matters entangled in it. If the "light flocculent floating little masses," as described by Mr. Parkes, p. 70, were really composed of peroxide of iron, they would have subsided by the laws of specific gravity, however finely the particles of which they were constituted may have been originally subdivided; and unless I have forgotten my hydrostatics, a diminution in the bore of the drain-pipes could not possibly cause "a more concentrated stream of water" to be directed through them, as described at p. 60. This is a different problem from that by which we compare the velocity of a given quantity of fluid as it passes through a narrow portion of a channel, with the velocity of the same quantity as it passes through a wider portion. A smaller discharge, but not a more rapid one, would be the only result obtained by so far diminishing the bore that the pipes should be completely filled. If Mr. Parkes has been successful in preventing the accumulation of the deposit, the reason must either be owing to the Alga not being able to grow under the altered conditions in which it now finds itself, or else to his having succeeded in keeping out such extraneous matters as would have assisted in retaining the decaying plant within the pipes.—*J. S. Henslow.*

CLOVER—MAKING HAY.—Clover when intended for hay, should be cut early. Nothing is gained by permitting it to stand. When cut in its green state and properly cured, it makes an excellent feed for horses, sheep and young stock generally; but it is greatly lessened in value by long standing. It should be cut when in bloom, or at least, before the seed has ripened.

In England, from which country we may derive many valuable lessons in practical agriculture, clover is seldom if ever spread as with us, the more judicious farmers of that country believing it far better and more economical, on the whole, to cure it in the cock, than to

expose it by spreading, to the wasting influence of the sun and winds. Most persons are aware that herbs, intended for medical purposes, are comparatively of little value unless cured in the shade. That the sun abstracts much of the goodness from this species of hay when exposed for any considerable length of time, is beyond a doubt. By drying, much of the foliage, as well as the blossoms, becomes detached and lost, and as this constitutes, where the growth is rank, much the most valuable part of the crop, its loss is a matter of considerable importance, and should be guarded against by all means possible to be devised.

We prefer mowing our clover when the air is clear—say from eight to eleven o'clock, after the dew has disappeared, and the ground becomes warm. We then leave it in the swathe till the approach of night, when it is carefully turned, by which a fresh, undried surface is presented to the night dew, and the wilted and comparatively dried portions secured by being turned under. In this condition it remains till the afternoon of the next day, when, if the weather be fair, it is pitched into "grass cock," and left to make. Care, however, is essential in constructing the cocks, as when too bulky, the grass will heat and become musty, which greatly detracts from the value of the hay. A "grass cock" ought never to contain more than eighty or a hundred pounds of unmade or partially wilted grass, and must not be formed too compactly, or be too much consolidated by pressure as to cause a liability to ferment or heat. A careful and practiced workman will pitch the grass into cock much better and with far greater dispatch, if the crop be an average one, than it can be raked and cocked in the usual way. As soon as the hay is thoroughly made, it should be got in without spreading, and in dry weather. In the barn it should be closely packed.—*Germantown Telegraph.*

ON PLOUGHING UNDER GREEN CROPS FOR MANURE.

By PROFESSOR DONALDSON, of Hoddesdon.

Mr. Bell's communication, in last number of the Journal, in which the ploughing-in of turnip tops is suggested to admit of green-cropping clay lands, will probably be tested by the following observations:—

The ploughing down and covering in the land of the crops of green juicy plants, to act as a manure, is a practice of the ancient Romans, and is yet followed in Italy and other parts of Europe. This mode of fertilizing suits warm countries, where vegetation is rapid and luxuriant; in our colder latitude, where culmiferous productions are more the object of cultivation, the advantage of the practice has not yet appeared. The plants used for that purpose are the leguminous kinds,—tares, vetches, clovers, peas, buck-wheat, and spurrey; and in Italy the harvest is early, and the crop is removed in time sufficient to allow the maturity of the green plants. Our climate does not allow such successions, and a crop of any kind must be unprofitable that yields in return only what it has extracted, and leaves the land as before in point of fertility. In order to apply the practice profitably, a very full crop must be supposed; and the land that will produce a full crop of these substances will yield crops of a more valuable kind. On poor lands, a scanty crop will be expected, which will be of little service for that purpose, and almost invariably fills the land with weeds. Rape is reckoned very good for the purpose, as it is oily and mucilaginous. Sorrel has been recommended to be cultivated, and ploughed down with lime, in order to produce a chemical combination; but few soils will yield sorrels in abundance, and the chemical result may be too uncertain to justify the process.

The decomposition of vegetable matter below or in the soil has been put forth in favour of this practice, as

producing a soluble matter, and also mould, by continued decomposition. The gradual decay of substances above or below ground is certain; the formation of those that may be useful in promoting the growth of vegetables is a very different question. Fermentation is a sensible internal motion of the constituent particles of a fluid, moist, or mixed compound body, by which they are removed from their present situation and combination, and are again joined together in a new or different order and arrangement, forming new compounds with very different qualities from the original body or substance. It results from the combined action of air, heat, and moisture; and the first agent is oxygen, afforded either by the atmosphere, or by the decomposition of the included water; oxygen gas being absorbed, and caloric separated during the process; carbonic acid is one of the results, and fermentation is the natural process for reducing vegetables to a simple state of combination. The first change is the vinous or saccharine fermentation, the conversion of the insipid matter of stems and seeds into a saccharine substance, in which process the presence of water and saccharum are indispensable, and some other things must be added. The gramineous and herbaceous plants are generally stored with saccharum, and the acetous fermentation follows, which is succeeded by the putrid, or the last stage of the process. This last stage is always certain, though the regular gradation of the others may be interrupted. During putrefaction, vegetables emit ammonia, phosphoretted hydrogen gas, and constantly carbonic acid gas, and hydrogen gas, impregnated with unknown vegetable matters. The colour changes to a dark brown; it swells, and becomes heated, and is reduced to an earthy mass. The constituents enter into new combinations; the hydrogen unites with the oxygen, and is either volatilized in water, or separated in a gaseous form, and carries with it a portion of carbon. A part of this principle unites with the azote in those plants that contain it; a part remains in the putrid mass, giving it odour and colour; a portion of carbon remains in the magna, and a part unites with the hydrogen, and a part with the oxygen, forming with the latter carbonic acid. The brown mass, or earthy residue, contains the primitive earths, metals, oils and salts, which are found in vegetables, forms vegetable mould, and constitutes the principal means by which the earth receives back the principles it loses by the support it affords to vegetable life. In this process, air, heat and moisture are indispensable, and a quantity of the substances laid together. Green and dry vegetables ploughed into the land will lie in too small a quantity to generate heat; air and moisture will be nearly excluded, and no active fermentation will happen to afford æriiform matters in the soil, as may be daily seen in the case of stubble and other dry substances. The conversion to mould by a gradual decay is undeniable, but activity for present benefit is wanting, unless an incipient fermentation has been effected before the application to break the texture by a disintegration of the fibrous texture. It may very justly be reckoned a wasteful practice to apply for manuring, substances that can be used as food for animals, and thus effect a double purpose. The second crops of clover and tares have been ploughed under for manure, and in that case the first crops must be cut early to allow the second crop to attain a bulk of plants for the intended purpose.

If any of these succulent plants be used as a manure for wheat, the bastard fallowing will dissipate the enriching matter, and if it be covered with the last furrow, the land must be in an unwrought state, and it can only be reckoned a catch crop. The only plausible case of application is on places that have failed to receive the due portion of farm-yard manure; but the season being occupied in bringing forward a crop for the benefit of the land as dung, wholly excludes any effectual

working of the soil, and in any case such unmanured lands may be partly wrought and sown with crops that will afford food to animals, and also to the land, by the subsequent application of the excrementitious matter. The use of green crops as manures will not fail to constitute very foul farming; and though a successful isolated case may occur, an extension of the practice will not be expected. The green crops may be harrowed and rolled before ploughing, which will render them more convenient for being covered, and a compost of lime and earth has been added, which will also aid the covering of them in the land, and tend to promote the putrefaction. It may be supposed, that, in the countries where the practice is said to be so very beneficial, the soils may be more loose and friable, the vegetation more rapid and luxuriant, and the plants more juicy and succulent, and consequently more tender and easier of decomposition than in our country, and that a variety of circumstances may combine in rendering the practice very useful in some countries, and inapplicable in others. The plants may be ploughed under when in full blossom, and, if possible, in moist warm weather; and the latter circumstance may constitute an advantage in favour of the custom in the warm countries where it prevails.—*Scottish Agricultural Journal*.

WIND-GALLS.—Horses which are subjected to hard service are liable to have what are called *wind-galls*, on those parts of the limbs which are most exposed, especially about the hough and upper pastern joints. The affection is an undue enlargement of little bags or sacs which are situated in the parts named. By the straining of the tendons these sacs become injured, and sometimes take on inflammation, and become hard. Youatt says, "The farriers used to suppose that they contained wind; hence their name *wind-galls*; and hence the practice of opening them, by which dreadful inflammation has often been produced, and many a valuable horse destroyed." As to treatment, the author just referred to directs, "If the tumors are numerous and large, and seem to impede the motion of the limb, they may be attacked first by bandage. The roller should be of flannel, and soft pads on each side of the enlargements, and bound down tightly upon them. The bandage may be wetted with a lotion composed of three parts vinegar to one of spirits of wine. The wind-gall will often diminish or disappear by this treatment, but will too frequently return when the horse is again hardly worked. A blister is a more effectual remedy, and firing still more certain, if the tumors be sufficiently large and annoying to justify our having recourse to measures so severe. In bad cases, the cautery is the only cure, for it will not only effect the immediate absorption of the fluid, and the reduction of the swelling, but, by contracting the skin, will act as a permanent bandage, and therefore prevent the reappearance of the tumor."—*American Farmer*.

POTATOES IN INDIA.—The potatoes from Bombay, Darjeeling, the Cherra Poonjee seed, were wonderfully fine and healthy, and to enable the public to form some idea of the state of perfection this grand and staple vegetable has been brought to, in this district, it is here recorded that 40 potatoes out of one garden weighed 20lbs. The skin of all delicately white and fine, and every potatoe free from knots.

SANDY PLAINS.—Clay, ashes, decomposed or rotten manure, with clover, it is said, has proved to be the best means of improving sandy plain lands. Plaster is useful in situations where it will set. This can be ascertained by trial.

Horticulture.

TORONTO HORTICULTURAL SOCIETY.

An extra Exhibition of roses and other flowers that would likely fade before the next regular show in July, took place in the beautiful grounds of the old Government-house in this city, on the afternoon of Thursday the 28th of June. Unfortunately the weather was showery, and the number of visitors and exhibitors was consequently not so large as it would have been under more auspicious circumstances. Mr. Fleming's large collection of roses was very fine, including several recent varieties. We also noticed some fine specimens of geraniums, peonies, verbenas, &c. Mr. Leslie's collection contained some beautiful roses, with two or three magnificent bouquets. Mr. Gordon exhibited some very fine specimens, and a plate of strawberries in fine condition, grown, we understood, in the garden of John Cameron, Esq., of this city.

Certificates were given by the Committee as follows:

For the best collection of Roses, . Mr. Fleming.
 " second best do. do. . Mr. Gordon.

For the best collect'n of other flowers, Mr. Fleming.
 " second best do. do. . Mr. Leslie.

The next Exhibition will be held in the same place, July 19th, when we expect a very large display of flowering exotics, green-house plants, vegetables, fruits, &c., which with the charming music of the band of Rifles, and the beauty and refreshing shade of the tastefully laid out grounds, cannot fail to attract a numerous body of visitors. We may just mention for the information of our more distant readers, that the Toronto Horticultural Society is by no means restricted to the neighbourhood of this city, but is open to the whole Province of Upper Canada. We hope to see at the next Exhibitions to be held in July and September, some of the florists and fruit growers of the Gore, Niagara, and other districts. The terms are easy—5s. per annum for ordinary members, and 10s. for competing members. Professor Croft, the honorary Secretary, would furnish full particulars of the organisation and objects of the Society.

The subjoined list comprises the names of the several varieties of roses exhibited and cultivated by Mr. Jas. Fleming of the Yonge-street nursery, which we readily insert for the information of our floricultural readers:—

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| 1. Common Red Moss. | 16. George the Fourth. |
| 2. Perpetual White Moss. | 17. Royal Greatness. |
| 3. Luxembourg Moss. | 18. Russelyanum. |

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| 4. Crusted Moss. | 19. Capitaine Sessolet. |
| 5. Persian yellow. | 20. Coutard. |
| 6. Harrison yellow. | 21. Madam Plantier. |
| 7. Velours Episcopal. | 22. Oilet Parfait. |
| 8. Madam Hardy. | 23. Village Maid. |
| 9. Venus. | 24. Brennus. |
| 10. Fulgens. | 25. French Ruin. |
| 11. La Tourteriele. | 26. Globe Hip. |
| 12. Lady Stuart. | 27. Victor Hugo. |
| 13. London pride. | 28. Fanny parissot. |
| 14. Marselina. | 29. Violet Blue. |
| 15. Miralba. | 30. Common Cabbage. |

PRACTICAL HINTS FOR AMATEURS AND SMALL GARDENS.

A FEW REMARKS ON ROSES.—Several matters of importance in the culture of Roses require to be attended to, which are yet too simple to demand any lengthened observations. These we shall bring together in the present paper, and then dismiss this flower for the present; hoping for all gardeners that their labours, wisely conducted, may be rewarded by abundance of bloom, and that the season may be propitious.

Where there are many Roses in a garden, a late bloom should be secured by pruning some of them late; that is, after the first leaves are developed. The severe weather of last week has sadly nipped many of the early flower blossoms, and such trees will do admirably for this experiment. Cut them in, so that new buds may be brought into activity, and these will flower a month after those which are not so treated. Moving them at this time will have the same effect, although it is rather late for this operation. It may be done if necessary; and the trees thus transplanted should be cut close in, and well watered in dry weather. Contrivances to secure a late bloom are less necessary now that autumnal Roses are so numerous; but at the same time the amateur may wish to prolong the flowing of some kinds which have not this late habit. We have found that old favourite, the common Provence Rose, do well when moved late.

Attention should be given to every Rose tree before it is in full leaf, to ascertain the position its branches are likely to take when they are laden with the full foliage and flowers of summer. We have often been vexed at the tendency to bend down to the ground, of some of our best bushes, which we thought were strong enough to retain an erect position; and when stakes are applied at that late period of growth, the tree can seldom be made to assume a natural appearance. The best plan is, to go round the garden and stake up all trees which, judging from past observation, are not sufficiently supported. Imagine them as they will be in July, when "washed in a shower," and when "the plentiful moisture" will add so much to their weight, and act accordingly. Let the staking and tying up be performed with taste, so that the bush when in bloom shall have a unique and compact appearance.

Insects should be sought after in their egg state, or, at all events, when the caterpillar first appears. The grubs which bury themselves so adroitly in the folds of a Rose-leaf, do not come by chance, but proceed from the egg to a gradual maturity; if therefore their habits are studied they may be caught in time, before they have made many meals on Rose buds. Children might be of great use in searching out these pests, when taught to distinguish between those which are injurious and those of an ichneumon or parasite character. Papers in former numbers of the *Chronicle* may be advantageously consulted on this subject.

The shoots of Briars must be arranged for budding, only two or three being left in the position required for the head of the future trees. Tree Roses lately formed

must be guarded by stakes reaching up to the budded part, which must be tied to them. Without this precaution, some high wind may carry away the whole head, as much to the surprise and annoyance of the proprietor as were felt by John Gilpin when he lost his hat and wig. *H. B.—Gardeners' Chronicle.*

WILD FLOWERS.—Young gardeners and others should not neglect any opportunity that may offer in becoming acquainted with our native plants; they will find it both a pleasant and profitable study, if they engage in it heartily. Flowers in great variety are now appearing,

"As if the rainbows of the fresh mild spring
Had blossomed where they fell."

Mrs. Loudon, in her "Botany for Ladies," remarks: "Indeed, I do not think that I could form a kinder wish for them than to hope that they may find as much pleasure in the pursuit as I have derived from it myself.—Whenever I go into any country I have formerly visited, I feel as though I were endowed with a new sense. Even the very banks by the sides of the roads, which I before thought dull and uninteresting, now appear fraught with beauty. A new charm seems thrown over the face of nature, and a degree of interest is given to even the commonest weeds. I have often heard that 'knowledge is power;' and I am quite sure that it contributes greatly to enjoyment. A man knowing nothing of natural history, and of course not caring for anything relating to it, may travel from one extremity of a country to another, without finding anything to interest, or even amuse him. But the man of science, and particularly the botanist, cannot walk a dozen yards along a beaten turnpike road without finding something to excite his attention. A wild plant in a hedge, a tuft of moss on a wall, and even the lichens which discolour the stones, all present objects of interest and of admiration for that Almighty power, whose care has provided the flower to shelter the infant germ, and has laid up a stock of nourishment in the seed to supply the first wants of the tender plant. It has been often said, that the study of nature has a tendency to elevate and ameliorate the mind, and there is perhaps no branch of natural history which more fully illustrates the truth of this remark than botany.

CULTIVATION OF HARDY PLANTS.—We have often thought that more attention should be bestowed in the cultivation of hardy plants that would flower at this season (Spring) than is commonly done in most parts of the country. The Peony, for instance, deserves better treatment than it generally receives; the species of the family are, in most cases, easily cultivated, hardy, showy, and flower early. They are commonly put into three divisions—viz., the shrubby, herbaceous, and the pubescent; and some beautiful varieties may be had in each division. One species is a native of Britain, and grows in an island in the Severn; it is noticed by one of our poets in the following lines:—

The cliff, abrupt and high,
And desolate, and cold, and bleak, uplifts
Its barren brow. But on its steep
One native flower is seen—the Peony;
One flower which smiles in sunshine and in storm.
There still companionless, but yet not sad;
She has no sister of the summer field—
None to rejoice with her when spring returns—
None that in sympathy may bend its head
When evening winds blow hollow o'er the rock
In autumn's gloom.

The instructions commonly given to those who may raise them from seed are the following:—Sow the seed immediately after it ripens, in light fresh earth, covering them half an inch. They will come up the following spring, and may remain in the seed-bed two years before they are transplanted, sifting a little rich earth

over them when the leaves decay at the end of the growing season. Having made two years growth in the seed-bed, they are to be planted in September into other well-prepared beds of light fresh earth, and placed six inches asunder every way, and three inches deep. Here they are to remain till they flower, which is generally the fourth or fifth summer after sowing. Full-grown roots are readily propagated by parting, taking care to preserve a bud on the crown of each offset. The plants are very hardy; they will grow in almost any soil and situation; and even under the shade of trees, where Miller says they continue longest in beauty, they make excellent border plants, and form a splendid ornament both to the parterre and shrubbery. They are natives of many parts of the world: the common species, we are told, grows wild in China and Siberia, as well as in various parts of Europe, and is said to be very beautiful on Mount Ida. The handsome flower called the Chinese Tree Peony, *Paeonia moutan*, the flowers of which expand about the end of the month, and are in the different varieties of various tints, is sufficiently hardy to bear the open air of our winters; even the severe frost of last month only injured a few of the leaves of the plants—the flower buds appear to have received little or no injury. We are also informed that the tree Peony is a cherished flower in China, and is said to have been cultivated in the Chinese gardens for fourteen hundred years, and is believed to have been brought originally from some of the mountains of that empire. Some years ago it brought a high price in that country, but can now be had at most of our nurseries at a very reasonable rate.—*Gardener's Journal.*

PROTECT YOUR VINES.—We are informed by a gentleman of this town, says the *Lynn News*, of an experiment made by him last year upon his squash vines, which proved successful in clearing off the bugs. He strewn on the vines the bran of pepper, which may be obtained at any of the spice mills where pepper is ground. Every one who has a garden will appreciate the value of a remedy so cheap and simple, and give it a trial. We should like to have those who try the experiment give us the result, if they find it successful.

SOWING SEED.—The finer the seed to be sown, the finer should the soil be made which is to receive it.

LAYERING.—Very many lovers of flowers have been discouraged from endeavouring to keep some of the most beautiful and easily managed plants, by want of a knowledge of the art of propagation. They find their plants to flourish and blossom well for a season or two; they are delighted with their fragrance or their beauty, but the time for disappointment and regret comes on apace. Perhaps the seeds do not ripen—most double flowers will not produce seeds at all—probably, even when ripe seeds are obtained and sown, after bestowing much attention and care upon the younglings, and watching anxiously, for months, until they come to maturity and expand into bloom, it is found that very inferior varieties have been produced, having little resemblance to the prized parent plant, and ill-rewarding the labor expended. The poor, inexperienced, and mortified florist next undertakes to raise fresh plants, by pipings, cuttings, or slips. Raise new plants he must, if he wishes to keep up his stock; for "all that live must die," and the most robust constitution is no security against an early death. The new attempt will in some instances succeed, and if it does, the original variety is perpetuated, with all its characteristics. But one who does not possess the whole paraphernalia of floriculture, — the stove, the green-house, the close frame, the bottom heat, the bell glasses, the matting and shades,—or one who, possessing some of them,

knows not how to use them properly, will fail much oftener than he will succeed.

There is, however, one method of propagation, in which, as respects a great number of species, the most ignorant may with a little care be entirely successful.

It is equally effective for Sweet Williams, Chinese pinks, and indeed for the whole genus *dianthus* and innumerable others.

The branch of which the layer is to be made, should be prepared by cutting off the leaves from that part which is to be covered with earth. If the plant is of woody texture, a ring of the bark about one eighth of an inch broad, should be cut off also. If the branch belongs to a jointed plant, like the carnation, &c., a sharp pen knife should be passed through its centre, so as to split it at the joint, and for about a half inch above and below it. This ringing or incision is useful, as it partially interrupts the flow of the sap, arresting a portion of it at the point from which the young roots are to spring. A small portion of the earth should then be removed, and the prepared branch should be secured in the cavity by a hooked peg. It should then be covered with light, rich mould, not that removed, from one to two inches deep. The depth should vary according to the character of the plant, the more succulent requiring the shallower covering, and the more woody and dry the deeper. When the layers have struck root, they should be severed from the parent plant, and potted, or planted in the garden by themselves. Most of our frequent flowering garden roses, grape vines, gooseberry bushes, snow balls, honeysuckles, and shrubbery in general, may, by this means, be readily and easily propagated to almost any extent, and if the layering be done soon after the full blooming of the plant is nearly over, the effect upon the stock is beneficial rather than injurious.—*Sartain's Magazine*.

ORNAMENTAL TREES.—One of the most popular lady writers, who, judging from what she has written, has lived among plain farmers in the western country has said that most settlers in a new country consider a tree as their natural enemy. This is true, we confess, to some extent. The earlier settlers, in clearing their fields, generally slay every thing before them; for if a tree should occasionally be left for shade or ornament, it would be saved with difficulty during the scathing fires that follow afterwards. But when the farmer removes his old log-house, to give place for his new mansion, neatly painted and adorned with bright green shutters, then the dock thistle, the briers, and brush-heaps should be routed from his door-yard, and some kind of ornamental shrubbery planted instead. Every portion of our country has some such suitable trees indigenous to the soil. The maple and locust are very hardy trees, and every where obtained in our latitude. The lilac is pretty, and dozens of other kinds procured with little trouble. By way of variety, and to enliven the scene a little, a few evergreens should be interspersed. The balsam fir is one of the most beautiful of this class. Evergreens, if transplanted, are not apt to live unless extra care is taken. The surest way is to dig them with as much earth adhering to the roots as possible, and place them immediately in an old tub, half-barrel, or something of the kind, then filling it up with the same earth from which the shrub was taken, and thus removed home and placed tub and all in the holes prepared for them. Afterwards the tub or box containing them can be knocked to pieces, that the roots may spread. Don't forget to water the plants occasionally if the weather should be dry. The trees should be placed on the outer margin of shrubberies for their beauty and protection. E. G.

—*Philadelphia Dollar Newspaper*.

THE LEMON.—The common lemon, Median lemon, or medicinal lemon, *Citrus medica*, is the best known and most important of the four species; and is often regarded as exclusively entitled to the name of lemon. It is a native of Assyria and Persia; and is cultivated in Italy, Spain, Portugal, and the south of France; and was introduced in the 5th decade of the 17th century, in the greenhouses of Britain. Its stem, from the ground to the topmost branch, usually attains a height of only about eight or nine feet; its branches are numerous, and have a greyish bark; its folial footstalks are alternate, naked, and linear; its leaves are ovate, acuminate, slightly indented, pale green, shining, and about four inches long and two broad; its flowers grow upon the twigs and small branches, and are peduncled, large, and odoriferous, and bloom throughout the greater part of the summer; and its fruit are the well known lemons of commerce, and do not require any description. This plant is exceedingly useful. Any ordinary large tree of it in Spain or Sicily brings to perfection, in favourable seasons, no fewer than about 3,000 lemons; and a remarkable tree at Crosello, in the vicinity of Massa in Italy, supposed to have been a wild plant, and producing only small and ill-flavoured fruit, brought to maturity in one season, about thirty-five years ago, the enormous number of upwards of 14,000. Many varieties of the lemon are produced and cultivated in the South of Europe, somewhat in the same manner as the varieties of apples and pears in Britain; and a few of those which have been longest and best known in Britain are the sour lemon, the sweet lemon, the pear-shaped lemon, the imperial lemon, the furrowed lemon, the Adam's apple lemon, the childing lemon, the variegated-leaved lemon-tree, and the double-flowered lemon tree. The greenhouse cultivation of the plant in Britain is the same as that of the orange-tree. Most of the lemons used in Britain are imported from Spain and Portugal, packed in chests, and each lemon separately rolled in paper; and those from Spain are in highest esteem.

CAULIFLOWERS.—I have been eating delicious cauliflowers all winter, thanks to your directions in the Horticulturist. I sowed seed for the winter crop about the middle of May, and when winter approached I lifted the plants in a damp day, with a little earth attached to the roots, and set them on the floor of a warm cellar, under one of my out-buildings. They were most of them not even showing the least signs of flowering when they were put in the cellar, and I confess I was a little incredulous as to their "coming to any thing" in their winter quarters. But they soon began to form blossom crowns, and I have cut the whitest and most delicious cauliflowers from these plants since last December that I have ever tasted. As this mode of treating cauliflowers is not generally known here, I have quite astonished my neighbours by the sight of such a fine winter vegetable in abundance.—*Horticulturist*.

MONSTER APPLE TREES.—There is an apple tree on the estate of Joseph Briggs, on Federal Hill, in the town of Dedham, supposed to be a hundred years old, which measures thirteen feet and a half in circumference, one foot from the ground. Its branches cover an area of about sixty feet in diameter. This tree is second only to that in Duxbury, which is sixteen feet in circumference a foot or two above the surface of the ground, is over one hundred years old, and bore in one year, fruit which made ten barrels of cider, in addition to thirty barrels of apples put in the cellar.—*Boston Traveller*.

Mechanics and General Science.

THE EXHAUSTING EFFECTS OF GYPSUM.

In the article headed "Plaster or Gypsum," in the May number of the *Agriculturist*, the true cause of the failure of gypsum to improve the clover crop, after it has been used for a number of years, has not, I think, been assigned; although some approach to it has been made in the passage "Or plaster may have a valuable effect, &c. &c. as a manure."

It would be a matter of just surprise that this agent should operate favourably for a term of years and then cease to have any beneficial effect, if it were the only mineral substance which the plant needed for its use. But as this is not the case, we ought not to wonder, when we consider the matter deeply, that after a time its application should no longer be of any advantage. Even without plaster, clover cannot be grown for a number of years at short intervals. In England, it has been found that when the Norfolk four years' course has been followed for a long continuance, the red clover will scarcely grow; the land becomes, as it is termed, clover sick. With the failure of the clover, the corn-crop that follows it is much deteriorated. Why is this? It is, in the first place, because the land has been exhausted of those substances which are essential to the growth of the clover: they have been carried off by the preceding crops faster than the decomposition of the mineral fragments in the soil has supplied them; and they have not been restored in sufficient abundance, if at all, by manure. Secondly, although clover is a tap-rooted plant, it does not thrive very well in too light a soil. Now the effect of repeated tillage is to render the stiffest soil lighter; the decaying roots of all cultivated crops, especially those of the plant in question, aiding to produce this change. So that at last the soil, if not originally very stiff, becomes too light and porous for the clover and also for the following grain-crop. Over soil in this state the frosts of winter have great power, and the young clover is consequently in much danger of being thrown out and winter-killed: if the succeeding crop be wheat, it also will suffer from the same cause. I shall merely make brief reference to a third reason which has been assigned, without laying much stress upon it, as it involves a still disputed question. The roots of plants possess the power of excreting some of the substances held in solution by the descending sap. The matter thus rejected is both organic and inorganic. These excretions, when they have accumulated in the soil, have been thought to be injurious to the plants which part with them, to such a degree as to render a change of crop necessary: but, although hurtful to the plants that produce them, they have been considered as affording nutritious matter to plants of other families. There is every reason to believe that plants do give out matter by their roots; but whether it is injurious to the excreting plants, and whether it is beneficial to other kinds of plants, are questions as yet not fully determined.

We will now proceed to ascertain what substances clover takes from the soil, as without this preliminary step it would be impossible to arrive at any satisfactory conclusion respecting the action of plaster upon it. The following analysis, by Sprengel, of the ash of the clover, will afford the required information:

Potash	26.70
Soda	7.07
Lime	37.09
Magnesia	4.45
Oxide of iron, alumina, &c.	0.20
Phosphoric acid	8.80
Sulphuric acid	5.98
Chlorine	4.86
Silica	4.85
	<hr/>
	100.00

Per cent. of ash in dry state . . . 7.48

It will be seen from this analysis that plaster is by no means the only mineral matter required by clover. Many other substances are essential to its growth some in large quantities, as potash; others in less; but all are indispensable. Unless the clover crop be artificially supplied with these mineral substances, or meet with them in the soil in sufficient quantity for the wants of the plants, it is in vain that plaster is applied. Thus we are directed to the correct explanation of why land becomes more speedily tired of clover when gypsum has been applied, than when it has not been used. Most soils, for the first few years that plaster is applied to them, contain a sufficient quantity of potash, &c., for the wants of the clover; and the result of the application of plaster is an abundant crop, perhaps double what the land would have produced without it. Consequently double the quantities of potash, and of the other mineral matters indicated in the above analysis, are abstracted from the soil, which will be exhausted and become clover-sick in a period probably about one-third shorter than it would have been, had plaster not been used. Were it not that the decomposition of the mineral rocky fragments in the soil is constantly going on, the land would be exhausted in half the time; but as this process is in continual operation, there are constantly fresh supplies furnished, although not in sufficient abundance for the demands of the plants. This is one reason why the land of the writer of the article in the *Dollar newspaper*, after plastering had been discontinued for five years, became capable of again bearing good crops. Had he applied unleached wood ashes with the plaster, he need not have given his land five years rest. Again, if I am right in thinking that the presence of the decaying roots tends to render the soil lighter and more porous, and therefore less suited for clover and for wheat, if that is to be the succeeding crop, it is perfectly evident that when the crop is very much increased, as by the application of plaster, this effect must also be very much greater than it otherwise would have been. Hence means calculated to consolidate and stiffen the soil must be adopted; and of these the use of a heavy roller is perhaps the most serviceable and of the most general application. If the theory

which attributes to the excretions of the roots of plants properties deleterious to their own species be correct, it must necessarily follow, that if the crop be more abundant, their excretions will be proportionately increased and the land will sooner become saturated with them. Hence time would be required for their decomposition before the same crop could be grown again with advantage. But in the mean while the land ought to produce good corn crops, if these excretions really act as manure to plants of other families.

With respect to the chemical view I have taken in explanation of land becoming clover-sick, it may be objected that it would not apply to the case related in the *Dollar newspaper*, because the clover was not removed from the soil, but was ploughed in for manure, and therefore abstracted nothing from the soil. This objection would not be valid. For although the clover itself does not deprive the land of any thing, yet the maize, wheat and tobacco, remove large quantities of inorganic matters which are not restored to the soil. And as the growth of these crops is in proportion to the luxuriance of the preceding clover, it follows that the land is ultimately exhausted, just as if the clover had been removed. Only the exhaustion is slower, the process occupying two years instead of one. But it is certain, for nothing of a mineral nature is restored to the land but sulphate of lime. Numerous mineral substances are carried off, and one only returned. Exhaustion must follow.

I cannot believe that plaster, as usually applied, can ever accumulate in the soil in such quantity as to produce any pernicious consequences: unless the land naturally contained a great deal of it, in which case its application would have been almost useless from the first. Sir Humphrey Davy analyzed a good wheat soil, a clay from Middlesex, and found in it nearly one per cent. of gypsum; a quantity, I apprehend, very much greater than could be accumulated in the soil by several years ordinary application of it, even supposing none to be carried off by the crops. Yet it did not prevent this land from bringing good wheat. It must also be borne in mind that the whole of the plaster will not be found, if a sufficient period be allowed to elapse after its application before the soil be examined for it. A considerable portion of it will be decomposed by the carbonate of ammonia of the atmosphere, with the formation of carbonate of lime (chalk) and sulphate of ammonia. Liebig, indeed, has attributed the beneficial action of gypsum on clover and grasses solely to this property of fixing the ammonia at all times present in the atmosphere and brought down by rains or dews. I am not inclined to admit that this is the only good effect of gypsum, although it appears almost certain that some of the benefit derived from it may be justly ascribed to this source. One argument in favour of this view is, that it has the most marked effect upon clover, when applied after the plant is in full leaf. That is after the heavy rains of spring have ceased, and when the plant exposes a large surface for retaining the plaster in the condition most favourable for fixing the ammonia of the atmos-

phere. I believe that Peschier observed, before Liebig's theory was broached, that gypsum laid upon the leaves of plants was gradually converted into carbonate of lime. The sulphate of ammonia formed is either absorbed by the leaves or carried into the soil by light rains and dews, and is then taken up by the roots. It is not my intention to go further into this matter, as to treat fully of it would occupy too much space and time. I only wished to show that all the plaster applied cannot in any case be accumulated in the soil. I will, however, add that the opponents of Liebig's doctrine,—on the ground that, if it be true, all lands, not already abounding in plaster or in sulphate of ammonia ought to be benefitted by it, which is not the case,—have apparently forgotten that if the plants are not supplied naturally or artificially with the several mineral substances shown above to be essential to their healthy growth, it is in vain that sulphate of ammonia is furnished to them by the action of gypsum.

To conclude, the action of plaster in some respects resembles that of lime, especially in its exhausting effects: for under ordinary treatment it does exhaust the land. But exhaustion is by no means a necessary consequence of its use. When numerous mineral substances are continually removed from the soil, it is absurd to suppose that its fertility can be kept up by the application of one only. What is liberated by the continual decomposition of fragments of rock and stones may be sufficient for the growth of scanty crops. But for large crops, a much greater supply than what this source can afford is necessary. Although there may be in any soil a quantity of mineral substances, in a fit state for the immediate use of plants, sufficient for several ordinary crops, it will only be equal to the demands of a few extraordinary ones, such as frequently follow the application of plaster. Whence is the great fertility of virgin soil? It arises from this source,—that for many years mineral and organic matters, fitted for the immediate consumption of vegetables, have been accumulating in it. This soil, however rich at first, is ultimately exhausted by continual cropping without an adequate supply of manure. If plaster alone be applied, the process will be much more rapid. These are points to which the farmer should ever direct his attention: if he would keep his land fertile, if he would not see it year by year producing less and less, until at last it will scarcely repay the labour and expense of cultivating it, he should not use plaster without a supply, and that a liberal one, of manures containing all the other substances required by his crops. Some land, indeed, is originally so rich that even with plaster it may be many years before its fertility is much impaired; but impaired it ultimately will be, and his successors will inherit an exhausted farm, even if it do not become worn out during his life.

Toronto, May, 1849.

N.

For the Agriculturist.

The number of the *Agriculturist* for May contains some remarks, extracted from a Buffalo paper, upon the subject of Professor Becks' analysis of

different kinds of salt. The writer appears to doubt the correctness of Professor Beck's statements, upon the ground that the Turk's Island and Liverpool salts are preferred by beef and pork packers and farmers to the Onondaga, although the latter salt is represented to be purer than either of the former. The fact of this preference is well known and allowed, but it does not militate against the accuracy of the analysis in question, as the writer of the observations in the Buffalo paper seems to think. The preference given to the former varieties is based upon experience; they have been found to be the best preservatives of meat, &c., although by no means the purest kinds of salt. For the antiseptic properties of salt are not in direct proportion to its purity. Indeed it would appear that perfectly pure salt, without any admixture of other saline substances, does not answer well for preserving meat. In illustration of this fact, I cannot do better than extract, from Darwin's *Voyage of a Naturalist*, the following passage, in which the author is describing the salt procured from a large salt-lake or salina he visited near the town of Patagonis, on the Rio Negro. "This salt is crystallized in great cubes, and is remarkably pure; Mr. Trenham Reeks has kindly analyzed some for me, and he finds in it only 0.26 of gypsum and 0.22 of earthy matter. It is a singular fact that it does not serve so well for preserving meat as sea-salt from the Cape de Verd Islands; and a merchant at Buenos Ayres told me that he considered it as 50 per cent. less valuable. Hence the Cape de Verd salt is constantly imported, and is mixed with that from these salinas. The purity of the Patagonian salt, or absence from it of those other saline bodies found in all sea-water, is the only assignable cause for this inferiority; a conclusion which no one, I think, would have suspected, but which is supported by the fact lately ascertained, that these salts answer best for preserving cheese which contain most of the deliquescent chlorides."

The purity of this Patagonian salt, as the reader cannot have failed to remark, exceeds that of the Onondaga article. Hence we have, I think, conclusive evidence that the purest salt is not the best for the purpose of preserving meat. Consequently the results of Professor Beck's analysis are not at variance with the generally entertained opinion of the superiority of the Turk's Island and Liverpool salt over the Onondaga.

Toronto, June, 1849.

N.

THE ISOLATION OF THE EARTH IN SPACE.

"He stretched out the north over the empty space, and hanged the earth upon nothing."—Job xxvi. 7.

It is not easy to conceive the entire isolation of the earth in space. That it does not spread out its dimensions into the abysses of the universe, until at length it attains some immovable basis upon which it may repose—that it rests on no pedestal, *hangs upon nothing*—floats in space, not being buoyed up—and not being supported does not fall,—are ideas which lie at the foundation of all our knowledge of the wisdom and power of God in the universe; but to realize which it is necessary that we approach them if not by the steps of a rigid demonstration, at least by those of a gradual progression. They are indeed but elementary deductions

of science; but not to be arrived at, until many false perceptions have been purged away from the eye of the mind, and the evidence of much experience presented to the understanding.

When we look forth upon the earth, it appears to be a surface broken into hill and dale, but everywhere terminated by the margin of that vast concavity of the heavens which is stretched out above us; and when we are at sea, we seem to be upon a circular plain of water, whose limit is no where far distant from us.* That error which assigns to the earth and to the heavens the boundary of the visible horizon, *corrects* itself indeed immediately that we travel from place to place; but how are we to free ourselves from the other error? Go where we will, we seem to be moving on a flat if not an even surface—we appear no where to be descending the sides of the earth, or climbing on its acclivity; and an impression of our senses irresistibly grows upon us that it is an extended plain. Astronomy tells us of a huge sphere self-supported in the space of the heavens, and of that space stretching forth interminably and immeasurably. How shall we realize this idea, and reconcile it with what we see?

Let us suppose a traveller, impressed with the belief that the earth is a plain, to set out and travel continually in the same direction in search of its boundaries. Travelling on until he meets the sea, let him embark upon it and traverse it until he again encounters the land; thus continuing his forward course unimpeded by any of the natural obstacles on the earth's surface. Never will he find any termination to it. Go where he will, still sea or land will lie open before him. There is no limit, no boundary, no interruption of its continuity; no chasm in it, no elevation extending itself into infinite and unknown regions of space—no greater obstacle than a mountain—no more impassable space than a valley, a lake, a river, or a sea.

His first conclusion would be, that he was travelling on a surface of infinite extent. After a time, however, this conclusion would correct itself, and he would perceive, to his amazement, that, although he had travelled on, continually away, as it seemed to him, from the region where his journey began, this onward journey had nevertheless brought him back to that region again. Has he then unconsciously turned round and retraced his steps? On this point he may assure himself, and he will find that, without ever turning backwards, or deviating from his course otherwise than perhaps to the right or the left of it, he has yet returned to the place whence he set out.

But a very slight exercise of his judgment will be sufficient to shew him, from this fact alone, that the earth's surface is not one extending *infinitely*, at least in the direction in which he has travelled, nor bounded by any edge or limit; but, like the surface which encloses a solid body, continuous, and returning into itself.† If this were not the case, the farther he travelled in the same direction, or towards the same direction, the farther he would of necessity have receded from the point at which he set out; and he could never, travelling as he did, have reached that point. Thus, if I see a fly making a journey across my table with his head always in the same direction, or deviating only to the right or left of that direction, it is manifest to me that he continually recedes from his starting-place, at least as long as he remains upon the upper surface of the table. To reach it again, thus continually advancing

* If the eye be placed at a height of about ten feet from the surface of the water, the horizon is distant from it, in every direction, between four and five miles.

† Not, for instance, a surface like that of the page on which this is printed, lying flat, and terminated by an edge; but like that which it would have if it were rolled up so that its opposite edges met and were perfectly joined.

ing, he must crawl over the opposite edge of the table and along its under surface.*

Since, then, our traveller, journeying continually in the same direction over the earth's surface, or deviating from that direction only to the right or left, has returned to the same regions of the earth again, he must have gone round it; and it must be a surface returning into itself, at least in the direction in which he travelled. And if from his starting-place he has travelled in every possible direction, and always thus arrived at the same place again, then must it, not in one or two directions only, but in every direction, be a surface returning into itself—such a surface as would not only partly but completely contain a solid. Moreover, if in the course of these numerous journeys he met with no obstacle which he could not overpass, then would he be assured that there was no solid mass on which it rested, no pedestal by which it was supported, nothing from which it was suspended.

But it will be asserted that these journeys are all hypothetical; and that no traveller has thus, setting out from one place, made journeys in all directions round the earth. True; but if all the journeys and voyages which have been made were collated and compared, it would be found that these supposed journeys have been made, if not by one, at any rate by a number of different persons; and we have the results of their experience, which is to us as certain evidence, and indeed more certain than that of a single traveller would have been.*

There is indeed scarcely a week in which this great fact is not put to the test of experiment. Never perhaps does a week pass in which there does not arrive, in some port of Europe or America, some vessel which, having sailed from that port continually on the same course, or deviated only to the right and left of that course, has, nevertheless, returned to that port again; which it could never have done if the earth's surface were other than that of a continuous solid; if it were a flat, or infinitely extended, or a terminated surface, not returning into itself;† or a small portion of the surface of an infinitely extended plane; or an island, floated in the abysses of space; or the summit of a mountain, whose base reposes in some fathomless region unknown to us. This earth of ours is a huge mass, self-poised, supported upon nothing, hung upon nothing—enveloped by the air which we breathe, and surrounded by the space of the heavens.

How many thoughts does the mind embrace in this idea! The surface of the earth being that of a solid mass, there must be some point on the opposite side of it now immediately beneath my feet. Yet have I reason to believe, indeed I know, that every thing goes on there as it does here; all heavy bodies tend to fall to the surface of the earth there as they do here, and yet falling there and here they must fall in opposite directions. Men move about there as freely as they do

here; although their position is inverted in respect to mine, they have no tendency to fall off; on the contrary, they are pressed by their weight to the earth's surface there as I am here; so that, in fact, we are pressed by our weight in the direction of our feet towards one another; and were we to fall, each would fall towards the other. Since, then, weight is something which on opposite sides of the earth presses bodies towards its surface, it is evidently a power in the earth itself, of which I see the analogy in the attraction of a magnet, which all round, and on its opposite sides, in opposite directions, fixes small particles of iron upon its surface.

MILK.—In large towns, where the consumption of milk is very considerable, there is very little exposed to sale without previously receiving some fraudulent addition. In most cases, the substances which are added are by no means injurious to the health of the individuals who drink the milk; but they do not less diminish those good qualities which render milk so extremely valuable as an aliment. The best milk is of a mean consistence. Its specific gravity is about 1.0324, that of water being 1.0000. It should have a dull white colour, and a soft, agreeable, sweetish taste. The adulterant which is most frequently added to milk, and which is the most difficult of detection, is water. Milk which has been diluted with water always presents a bluish colour, instead of that dull white which is the characteristic of pure milk. It has also a watery taste, and is found to yield, after three or four hours' exposure to the air, a much smaller proportion of cream than is produced by a similar quantity of pure milk.

Several attempts have been made to contrive *lactometers*, or instruments for ascertaining the comparative goodness of samples of milk. One of these lactometers was similar in principle to the hydrometer. It consists of a graduated glass tube and a bulb. When plunged into milk it took a higher or lower position, according to the assumed goodness of the milk. But this instrument was far from possessing a desirable degree of certainty in its indications. The difference of temperature in various cows, the greater or less abundance of the animal's food, and its age and state of health, have all great influence on the specific gravity of the milk produced. A *lactometer* of a better description consists of a glass tube about a foot long and half an inch in diameter; tubes of which size, supported by a foot, can be bought at the glass-houses for eighteen pence. If milk is poured into a tube of this kind, and permitted to repose there, the cream which it contains rises to the surface and forms a cake, the bulk of which, compared with the bulk of the milk, denotes the comparative goodness of the milk. The lactometer tube should be graduated into ten parts, and the two upper parts divided each into ten others. It is then easy to ascertain at a glance the *per centage* of cream contained in any sample of milk submitted to trial. For the sake of obtaining a *standard*, it should be ascertained by direct experiments, how many parts of cream are contained in 100 parts of genuine new milk.

The bluish colour and the thin appearance produced in milk by dilution with water, are sometimes hidden by the addition of flour and yoke of eggs, which not only correct the colour, but give more consistence to the mixture. The presence of the flour can be detected by means of iodine.

CREAM.—Cream, being an article in considerable demand, and bearing a high price, is frequently adulterated with compounds containing starch and skimmed milk. Arrow-root is the substance which is best adapted and most employed for this purpose. It is mixed

* This illustration will be complete, if we compare the case of a fly crawling over the surface of an orange with that of the fly crawling on the table.

† It is not strictly to all the points of the earth that our experience extends, for there are some which no human being has perhaps ever crossed, and many which have never been visited by any one whose authority we have for the fact asserted in the text; yet so few are these cases, when compared to those of which we have experienced, that, although they leave the matter under the form of a probability, it is one which is *practically* a certainty.

† A year or two ago it was announced that vessels set out every six weeks from the port of Liverpool, to make the voyage round the world. Their course is south-west until they reach Cape Horn; then still westerly until they make New Holland; then perhaps north-west, to some port of India; again south-west, to the Cape of Good Hope; and then north-west, home. Thus sailing continually to the west, they have returned to their port. Had the world not been round, they must continually have receded from it.

and boiled with skimmed milk into a thin paste, and after cooling is mixed with genuine cream in various proportions. The fraud may be detected by adding to the cream a solution of iodine in alcohol, or by adding a little nitric acid to the milk, and then a few drops of a solution of iodide of potassium. Either of these tests communicates a blue colour to cream which contains arrow-root, rice-powder, flour, or any other substance of which starch is a constituent.

MUSHROOMS.—A great number of *fungi* of a poisonous nature, bear a near resemblance to the mild eatable mushroom, so that even the best judges of them are liable to occasional deception. The following description of the true mushroom may be useful to those who intend to gather or to purchase this vegetable. The *gills* or under part of the cap are loose, of a *pinky-red*, changing to a liver-colour; situated close to the stem, but not united to it; very thick set, irregularly disposed, some forked next the stem, some next the edge of the cap, and some at both ends, in which case the intermediate smaller gills are generally excluded. The *cap* or *pileus* is externally white, changing to brown when old, and becoming scurfy; it is regularly convex, fleshy, flatter when old, from two to four inches, but sometimes even nine inches in diameter; it liquifies as it decays; the flesh is white. The *stem* is solid, white, cylindrical, from two to three inches high, half an inch in diameter. The *curtain* or membrane which extends from the stem to the edge of the cap, is white and delicate. When the mushroom first makes its appearance, it is smooth and almost globular, and in this state it is called a *button*. This species is esteemed the best and most savoury, and is much in request for the table. It is eaten fresh, either stewed or broiled, or preserved as a pickle, or in powder: it also furnishes the sauce called ketchup. The field plants are better for eating than those raised in artificial beds, their flesh being more tender; but the cultivated mushrooms are better looking, may be more easily collected in the proper state for eating, and are firmer and better for pickling. The wild mushrooms are found in parks and other pastures where the turf has not been ploughed up for many years. The best time for gathering them is in August and September.

Those who are accustomed to mushrooms can distinguish the true from the false *by the smell*. The following test will be found useful to other persons: Sprinkle salt on the spongy part or gills of the mushrooms to be tried. If they turn yellow, they are poisonous; if they turn black, they are good. Allow the salt to act a little time before you decide as to the colour.

Characters of False Mushrooms or Poisonous Fungi.—They have a warty cap, or else fragments of membrane adhering to the upper surface; they are heavy, they emerge from a *rufous* or bag; they grow in woods and shady places, or in tufts or clusters on the trunks or stumps of trees; they have an astringent styptic taste and a pungent and often nauseous odour; they become blue after being cut; they are moist on the surface; they possess an orange or rose-red colour, they turn yellow when salted. Mushrooms which possess any of these properties, are to be shunned as dangerous.

MAY DEW.—Most people are familiar with the appearance of the pearly dewdrops, as they hang upon the blades of grass or the leaves of trees, or stud like gems the prickly points of the brier or thorn, in the cheering light of the summer sunrise; yet the means by which the moisture becomes thus deposited, while the surrounding atmosphere is clear and dry, (as far, at least, as the senses can judge,) is in general passed over without notice.

Although in dry summer weather the air may appear

entirely devoid of moisture, it is never *actually* so, as may be proved by the simple experiment of placing a known weight of any substance having an affinity for water in the open air for some time, and noting its increase of weight. For this purpose, various substances may be used, and among others, carefully dried earth, 1,000 grains of which, of a clayey texture, was found by Schulser, during a night of twelve hours, to have gained twenty-five grains: and the experiments of Sir H. Davy give similar results. This capacity of the air for retaining moisture seems to depend upon two conditions—1st, its weight, or density, as indicated by the thermometer—the greater the density, or heat, of the air, the more moisture it will retain. A person breathing in an atmosphere of 98° to 100° Fah., will observe nothing but air issuing from the mouth and nostrils; but let a colder medium, or anything presenting a surface of lower temperature be introduced, and vapour is immediately visible, which is deposited in the form of dew; as, for instance, when one breathes against a pane of glass in a frosty day. Here, then, is the simple illustration of the falling of the dew; the air holding vapour in invisible suspension, coming in contact with substances colder than itself, the vapour is condensed, and adheres to the condensing body in the form of water.

It may here be asked, why substances of a solid description have a tendency to become colder than the air by which they are surrounded? and why some substances have this tendency more than others? For an explanation of this, we must refer to one of the laws which regulate the distribution of heat, viz.: radiation. All bodies, even the coldest, radiate, or throw out heat, in straight lines, and are radiated upon by all other bodies in their presence, and not in contact. When a substance is being cooled, it is so in consequence of the heat which it gives out being greater than that which surrounding substances are able to return to it, and *vice versa* when it is being heated. But, when a body is so situated as to permit of radiation going freely on without any compensating return of heat, it is evident that its temperature must be materially lowered. The surface of the earth radiates to the clouds, and the clouds radiate to the earth again—the intervening air allowing the radiant rays to pass freely to and fro without being sensibly heated in itself. But when the sky is clear and still, as in a star-light night, then the heat thrown out by the earth is dissipated through space, and substances at its surface become considerably colder than the air above them. In conformity with the above statement, dew is most abundant, 1st, when a clear night succeeds a still, warm, sun-shiney day, the atmosphere being then high in temperature, and loaded with moisture, in consequence of the previous day's evaporation, and radiation having free scope; 2nd, after rain, partly as above, from the humidity of the air, and partly from the reduction of temperature occasioned by the increased evaporation at the earth's surface; and 3rd, when the density of the air is reduced as shown by the falling of the barometer, a circumstance often attended by a clear sky and frosty dew in the morning, and rain in the latter part of the day. In close, cloudy, dry weather, dew is never to be met with.

It must be obvious, however, to the most casual observer, that different substances are differently affected in regard to dew; a phenomenon for the explanation of which we would require to go into the laws of heat to a much greater extent than our space at present permits. Suffice it to say, that the researches and experiments of science have shewn that different substances possess the property of radiation in a very different degree. 'Good radiators,' says Turner, in his *Elements of Chemistry*, 'such as grass, wood, the leaves of plants, and filamentous substances in general, reduce their temperatures in favourable states of the weather, ten, twelve, or even

fifteen degrees below that of the circumambient air; and while these are drenched with dew, pieces of polished metal, smooth stones, and other imperfect radiators, are barely moistened, and are nearly as warm as the air above them.' 'Indeed,' says another popular writer, every shrub and herb, every leaf and blade of grass, possesses, according to its kind, a different power of radiation, so that each condenses as much dew as is necessary for its own individual and peculiar exigencies; thus, not even a single dewdrop seems to have been formed by the rude hand of chance; but it is adjusted by the balance of Infinite wisdom to accomplish a definite and benevolent end.'

So much for dew: a word upon the old and popular rule of gathering it. We are not prepared to say at what time the application of May-dew as a cosmetic for improving the complexion of the fair sex took its rise, it was, however, somewhere within the limit of 'hoary antiquity.' A writer in the 'Spectator,' 150 years ago, says, 'there is not a maiden gentlewoman of any good family in South Britain, who has not heard of the virtues of May dew;' and, if we recollect aright, Shakspeare, or some of the older poets, has a similar allusion. Many people go about to ridicule all such notions as the fruits of ignorance and superstitious delusion. We are of a different opinion; and believe that there are none of our popular 'fruits,' however senseless they may appear externally, but what carry something useful and instructive under them. Thus, in the instance before us, to render May-dew effectual to the beautifying of the female countenance, certain conditions were necessary to be attended to—it had to be gathered by the individual who wished to profit by it: it had to be gathered, too, in open rural situations, for there only was it to be found; and it had to be gathered by the sunrise, for therein consisted its principal virtue. If we put these conditions together, what do they make up? Why, the sum total of early rising, pure air, exercise, and recreation; things which we can assure our fair readers are better adapted to improve both the health and the complexion than all the kalydors and cold creams which quackery can produce. And this is the true moral and meaning which is hidden under the allegory of May-dew.—*Gardener's Journal*.

THE NATURAL WARFARE OF ANIMALS—This universal war of species is an established law of Nature, and, however startling it may appear at first sight, is advantageous on the whole. Violent deaths are as necessary to the proper regulation of Nature as natural deaths. The latter preserve the perpetual bloom of youth over the face of the earth; the former assist in maintaining the correct balance among the numbers of different species, and in restraining their exuberance within the proper limits. In these wars of the animals, Nature has provided that each creature should meet its death in the easiest possible manner. There is a certain spot in the spinal marrow where the two ascending main nerves that form the great brain cross one another, and if this spot be injured, death is the immediate consequence. This fact is well known to huntsmen and butchers. The latter plunges his knife into the neck of the ox at the exact spot, the animal immediately drops, and ceases to live after a few convulsions. On the same principle, the huntsman cuts through the neck of his game. The carnivorous animals always seize their prey by the neck, and bite through this part. In the same manner the hound kills the hare, and the bird of prey its quarry. The polecat also destroys its prey at a single spring. Dr. Gall locked up a pole-cat for some time, during which he fed it on bones till its teeth were blunted. While in this state, it was unable to kill the rabbits placed in its

kennel with the same despatch as formerly; but when they had again grown sharp, Gall observed that, on the very first leap it made on the rabbit, it cut the little animal's neck on that very spot with a sharp fang, and instantaneous death ensued. He observed the same thing at a hawk's party. As soon as the hawk had reached the hare, it would immediately cut through that part of her neck with its bill. It is the organization of the carnivora—the procession of teeth, of claws, of short and narrow intestines; that imposes the office of Nature's executioners upon these animals by an imperative necessity. The sharp teeth of the leopard or panther might attempt in vain to grind plants; and even when we compel these animals to swallow bread and other purely vegetable substances, the gastric juice of their stomach is unable to dissolve them. On the contrary, the lamb and the light gazelle would refuse animal food with disgust. Their teeth are not formed for tearing, and their entire economy is adapted to a vegetable diet. It is thus that we find, in the organization of the animal, the reasons for all its actions.

GUTTA PERCHA is the sap of the *percha* (pertsha) tree, which grows in abundance in Borneo, and other of the islands of the Eastern Archipelago; and is obtained in the same manner as caoutchouc, or India rubber, by incisions made in the bark, from which the sap runs freely, and afterwards hardens. It is rapidly and extensively coming into use for articles of domestic and manufacturing utility, as well as in fine arts and for scientific purposes. But the principal use of gutta percha to our readers, at present, will be its usefulness as soles for boots and shoes, for which purpose it forms a valuable material, being entirely impervious to damp. In durability and cheapness gutta percha surpasses leather soles, while it has this very important advantage which that material does not fully possess, namely, that of preserving the feet entirely free from damp, and in a great degree from cold also; no matter how wet the weather may be. If the boots be protected by a gutta percha sole, no moisture can penetrate, while through a leathern sole, however thick, some dampness will find its way. By the complete exclusion of damp, one cause of colds and coughs is prevented, and the concomitant expense of a doctor or medicine sometimes avoided. For wear and tear through all seasons, gutta percha is capital. We have known boots soled with it in constant every-day wear during winter and summer, with every probability of continuing in good condition for a much longer period; indeed, there appears to be no reason why boots and shoes should not henceforth be made to last for an unlimited time, for as the welts are preserved from the action of moisture by the gutta percha, they do not so readily decay, and as long as the upper leather remains good, they may be repeatedly repaired with gutta percha on the soles.

SCIENCE.

ARTIFICIAL COLD.—A very intense degree of cold may be produced by mixing together equal parts of muriate of ammonia and saltpetre, both finely powdered, in about six parts of water, even in the hottest day; this is the method generally preferred to cool wine, and may be economically employed in many chemical experiments to produce artificial cold; the theory of this process is, that a solid, in assuming a liquid state, abstracts a large portion of the caloric from the fluid in which it is immersed.

INDUSTRY.—"There is more pleasure in eating an hour than in yawning a century."

Domestic and Miscellaneous.

THE OLD HOMESTEAD.

Down in a quiet, sun-lit valley,
 Stands my low-roofed cottage home;
 Rushing thoughts around it rally,
 Thither waited while I roam.
 There in summer, as of olden,
 Waves the green-topped maple-tree;
 There, in autumn, sere and golden,
 Shadows flit across the lea.
 Still the streamlet cleaves the meadow,
 Bordered by the mantling vine,
 Where, beneath the tall oak's shadow,
 Then I threw the hempen line.
 Thoughtless childhood! happy childhood!
 I would journey back to thee;
 Roam again the "tangled wildwood,"
 Sport beneath the maple-tree.
 There no busy sorrows fashion
 Phantoms in the path of youth,
 Nor pale care nor purple passion
 Taint the bloom of love and truth.

HAPPINESS AND LABOUR.—Industry not only develops the outward and visible elements of civilization, but also those vast capacities and divine energies that lie folded in the human mind, and the elements of strength that exist in man's physical organization. Exercise is as necessary to the development of man's mental and physical powers, as air is to the preservation of his existence. Without the genial and vital aliment of the one, life would become extinct; and without the invigorating influence of the other, weakness would unnerve the muscle, and imbecility degrade the mind. The blacksmith's arm lifts the sledge, and as he day by day, with patient toil, plies it to the yielding metal, it grows strong by the vigor of its labour. The farmer, as he goes forth with the diversified and purer labours of his occupation, feels the healthy strength of invigorated muscles. The clerk weakens with inaction at the desk, and the mechanic grows strong with the active and vigorous exercise of the plane at the bench. But there is higher and diviner development dependent upon exercise of labor, than mere bodily strength. The soul—immortal mind—with all its exalted susceptibilities, holy aspirations, wondrous powers and glorious destiny, can only expand itself and unfold its god-like attributes under the creative influence of constant activity. That "image of God" can only develop and reflect the glory of its infinite and eternal prototype, by the use of the heaven-appointed agency—labour. Then, as the mind is the noblest creation of the Deity, so is labour the most honourable destiny of man. But not only are mental and physical capacities the results of exercise, but all the blessings of their endowment are dependent upon their use. Mental or bodily strength are productive of no enjoyment, or are of no value, only as they by exertion shall be rendered such. Thus, all that is noble or useful in human life, is dependent upon exercise for their existence, and impart to it their nobility and dignity. No labour can be too humble, as none can be too exalted for honour and reward. Though the credit is lost in the mercenary consideration of the reward, yet even when the labourer reflects upon the vastness of the blessings conferred by the public works upon mankind, how justly proud can he feel of his agency in their construction—the most degraded of honest labour. How is the toil of the pioneer ennobled by the fact that he is contributing his part in restoring the primitive beauties of

Eden, and gracing the residence of man with its paradisaic culture and happiness? That man yonder, laboriously planting his posts, and stretching his wires, will be honoured more in the sure effects of increased intelligence, unity and peace in the world, than the lazy monarch upon the proudest throne in Christendom.

SUGAR FOR PRESERVING BUTTER.—A great deal has been written on preservatives for butter. Some writers say, if the butter-milk is wholly separated from the butter, that no preservative is necessary, as pure butter will keep well without any addition. Yet very few ever attempt to keep butter without the aid of some preservative; and most persons prefer butter slightly salted, and some would have it sugared also. We have known a few individuals who preferred butter without salt, and at each churning a little has been kept pure for their special use.

Some persons say that salt is the only proper preservative of butter, as other substances, such as sugar, saltpetre, &c., are injurious to the quality. Now this reminds us of those dictatorial individuals who would make their taste a standard, though it is at variance with that of the majority of consumers. One pomologist says that a vinous flavoured peach is the best, and that a pear of a champagne quality should be preferred, while the majority of mankind are in favour of sweet, luscious fruits. One person prefers tea, another coffee, and a third would like something a little more vinous or spirituous.

How absurd, then, when tastes are so different, for any one to assume the authority of judging for himself and for others too! Salt is used in butter, both for the purpose of preservation and to render it more palatable. But for long keeping, twice as much salt is used as is necessary to adapt it to the taste of consumers generally. This is evident from the small quantity of salt in lump butter, which usually sells high in market, while tub butter, equally as good, excepting the larger quantity of salt, generally sells twenty-five per cent. lower.

As the large quantity of salt, used for preservation, is injurious, as to taste, why should we not use a suitable quantity of salt for taste, and add sugar as a further preservative? For our use, we prefer butter and meat preserved, in part, by sugar, instead of using salt wholly, and using for preservation twice as much as would render it palatable. Butter and meat, preserved partially by sugar, are more healthful, as well as palatable.

We copy an article from the Pennsylvania Cultivator on this subject; but we do not endorse the recommendation of saltpetre for butter, nor are we prepared to say that it is injurious. But we choose to refrain from articles of doubtful utility, and which may be injurious or dangerous.

Sugar-Curing of Butter.—Persons who put up keg butter for their own use, or for a distant market, usually salt their butter very high. This high salting necessarily detracts from its quality, injures its ready sale, and reduces its price. If we can modify this excess of salt, by using more palatable substances, of equal efficacy, as preservatives, it will be an improvement. Chemists tell us that sugar is one of these substances; and experience gives us the same information. Who is not familiar with "sugar-cured hams"? If pork can be cured with sugar, why may not butter be so preserved also? is a common-sense inquiry. Experience has shown that it may. Dr. James Anderson, the celebrated agriculturist, whose treatise "On the Management of the Dairy, particularly with Respect to the Making and Curing of Butter," is still our highest and best authority on the subject, found, from some years' trial of it, that the following named composition—the properties of which we believe were discovered by his amiable lady—was far preferable to salt alone, as it not

only preserves the butter more effectually from all taint of rancidity, but makes it also look better, and taste sweeter, richer, and more marrowy, than portions of the same butter cured with common salt :—

Composition.—Take of sugar, one part ; of nitre, one part ; and of the best Spanish great salt, (or rock salt,) two parts. Beat the whole into a fine powder, mix them well together, and put them by for use. The doctor continues :—

“Of this composition, one ounce should be put to every sixteen ounces of butter ; mix this salt thoroughly with the butter as soon as it has been freed from the milk, and put it, without loss of time, down into the vessel prepared to receive it, pressing it so close as to leave no air-holes, or any kind of cavities within it. Smooth the surface, and if you expect that it will be above a day or two before you can add more, cover it up close with a piece of clean linen, and above that a piece of wetted parchment, or, for want of that, fine linen that has been dipped in melted butter, that is exactly fitted to the edges of the vessel all round, so as to exclude the air as much as possible, without the assistance of any watery brine : when more butter is to be added, these coverings are to be taken off, and the butter applied close above the former, pressing it down and smoothing it as before ; and so on till the vessel be full. When it is quite full, let the two covers be spread over it with the greatest care, and let a little melted butter be poured all round the edges, so as to fill up every cranny, and effectually exclude the air. A little salt may be then strewn over the whole, and the cover be firmly fixed down, to remain close shut till it be opened for use. If all this be carefully done, the butter may be kept perfectly sound in this climate for many years. How many years I cannot tell ; but I have seen it two years old, and in every respect as sweet and sound as when it was only a month old.

“It deserves to be remarked, that butter cured in this manner does not taste well till it has stood at least a fortnight after being salted ; but after that period is elapsed, it eats with a rich, marrowy taste that no other butter ever acquires ; and it tastes so little of salt, that a person who has been accustomed to eat butter cured with common salt only, would not imagine it had got one fourth part of the salt that would be necessary to preserve it.”

It is to be hoped some of our farmers, on reading the above, will follow its recommendations. The composition mentioned is, we have understood, much used in Goshen, Orange county, New York, a place famous for its superb butter. Great care should be taken to get the purest salt and sugar. That known through the country as the “ground alum” is the best salt. The sugar should be of the purest white—either the loaf or “fallen loaf.” Those excellent butter-makers in the glades of the Alleghanies, would do well to make some experiments for themselves, in this matter.—*New England Farmer.*

ENGLISH CHILDREN.—Mrs. Kirkland in some notes of travel in England, thus speaks of the physical management of children in that country.

“Pretty children one sees in abundance everywhere—and so nicely kept ! It seems to us that nobody knows so well how to take care for the physique of children as the English. They feed them with the simplest possible food, and are astonished when they hear that our young folks share the rich, heavy, high-seasoned dishes of their parents. Oatmeal porridge is considered a suitable breakfast for infant royalty itself ; and a simpler dinner at one o’clock, the proper thing for children whose parents dine sumptuously at seven. Exercise is considered one of the necessities of life, and a daily walk or ride (not drive) in the fresh air, the proper form for it. It might be su-

perfluous to notice anything so obvious if it were not that so many people in good circumstances with us, neglect this, and keep their children immured in nurseries, or cooped up in school-rooms, with no thought of exercise in the open air as amply requisite. We wish nothing so much for these benighted parents, as that they should once become acquainted with the habits and principles of a well ordered English nursery. A reform in that quarter is very much needed among us, and we know of no people so well able to be our instructors as the English, who have certainly brought the nursery system to great perfection, both as respects the comfort and advantage of the parents and children.

FEMALE EDUCATION.—Female education is highly important as connected with domestic life. It is at home where man passes the largest portion of his time—where he seeks a refuge from the vexations and embarrassments of business and enchanting repose from his exertions, a relaxation from care by the interchange of affections ; where some of the finest sympathies taste moral and disinterested love—such as is seldom found in the walks of a selfish and calculating world. Nothing can be more desirable than to make the domestic abode the highest object and satisfaction.

“Well ordered home man’s best delight to make,
And by submissive wisdom, modest skill,
With every gentle call eluding art,
To raise her virtues, animate her bless
And sweeten all the toils of human life—
This the female dignity and praise.

Neither rank, nor splendid mansions, nor expensively furnished apartments, nor luxurious repasts, can accomplish these actions. They are to be obtained from the riches of elevated principles, from the nobility of virtue, from the splendor of a religious beauty, from the banquet of refined taste, affectionate deportment and intellectual pleasures. Intelligence and piety throw the brightest sunshine over private life, and these are the results of female education.—*Ex.*

THE DOG DISTEMPER.—We are asked by a correspondent for a recipe to cure the dog distemper. He might, with about the same propriety, require of us a prescription for the bilious fever or the cholera ; for no two dogs are affected exactly alike, and what would be beneficial in one stage of the disease, would be injurious, perhaps, in another. Cooling, and slightly-purgative medicines, as sulphur and castor oil, are in some cases best, in others, emetics and astringent medicines. Eleven years ago, the past winter, we cured a favorite spaniel bitch, by giving her from three to five grains of powdered antimony, night and morning ; and three months ago, a noble Newfoundland pup of ours, seven months old, we cured in a week, by giving him sixteen grains of sulphur, mixed with a gill of warm milk, and administered night and morning. His food, during this time, was principally milk gruel. We advise our correspondent to consult his physician, or some reliable work on the diseases of the dog.—*American Agriculturist.*

BUSINESS FIRST, THEN PLEASURE.—A man who is very rich now, was very poor when he was a boy. When asked how he got his riches, he replied :—“My father taught me never to play till all my work for the day was finished, and never to spend money till I had earned it. If I had but half an hour’s work to do in a day, I must do that the first thing, and in half an hour. After this was done, I was allowed to play ; and I could then play with much more pleasure than if I had the thought of an unfinished task before my mind. I early formed the habit of doing everything in its time, and ✱

soon became perfectly easy to do so. It is to this habit that I now owe my prosperity." Let every boy who reads this, go and do likewise.—*Wright's Casket.*

RECIPES FOR THE LADIES.—I hope my dear friends will not imagine for a moment that I neglect their interests while taking notes. Here is proof that I am still mindful to pick up all little items like the following for future use:—

Louisiana Muffin Bread.—Take two pints of flour and one and a half of sifted corn meal, two spoonfuls of butter, one spoonful of yeast, and two eggs, and mix and break for breakfast. It is good.

Hopping Johnny (jambalaya).—Take a dressed chicken, or full-grown fowl, if not old, and cut all the flesh into small pieces, with a sharp knife. Put this into an iron pot, with a large spoonful of butter and one onion chopped fine; steep and stir it till it is brown; then add water enough to cover it, and put in some parsley, spices, and red pepper pods; chopped fine, and let it boil till you think it is barely done, taking care to stir it often, so as not to burn it; then stir in as much rice, when cooked, as will absorb all the water, which will be one pint of rice to two of water; stir and boil it a minute or so, and then let it stand and simmer until the rice is cooked, and you will have a most delicious dish of palatable, digestible food.

Something for the Children.—Make a dish of molasses candy, and, while it is hot, pour it out upon a deep plate, and stir in the meats of pecans, hickory nuts, hazle nuts, or peanuts, just as thick as you can stir them in, and then let it cool. Be careful and not eat too much of it, for it is very rich. It is a very nice dish for evening parties of the dear little girls and boys; and I have known some "big children" to like it pretty well.

SOLON ROBINSON.

Alabama, March 25, 1849.

TO YOUNG MEN.—There is no moral object so beautiful to me as a conscientious young man. I watch him as a star in the heavens: clouds may be before him, but we know that his light is behind them, and will beam again; the blaze of others' popularity may outshine him, but we know that, though not seen, he illuminates his own true sphere. He resists temptation not without a struggle, for that is not virtue; but he does resist and conquer; he hears the sarcasm of the profligate, and it stings him, for that is the trial of virtue, but heals the wound with his own pure touch. He heeds not the watchword of fashion; it leads to sin: the atheist, who says not only in his heart, but with his lips, "There is no God!" controls him not; he sees the hand of a creating God, and rejoices in it.

Woman is sheltered by fond arms and loving counsel; old age is protected by its experience, and manhood by its strength; but the young man stands amid the temptations of the world like a self-balanced tower; happy he who seeks and gains the prop and shelter of morality.

Onward, then, conscientious youth! raise thy standard and nerve thyself for goodness. If God has given thee intellectual power, awaken it in that cause: never let it be said of thee, "He helped to swell the tide of sin, by pouring his influence into its channels." If thou art feeble in mental strength, throw not that drop into a polluted current. Awake, rise, young man! assume the beautiful garb of virtue! It is fearfully easy to sin; it is difficult to be pure and holy. Put on the strength, then; let truth be the lady of thy love—defend her.—*Southern Rose.*

LOCKJAW WITH CHLOROFORM.—A correspondent of the *Spirit of the Times* describes successful treatment of lockjaw in the horse with chloroform. He says, "I have had several opportunities of testing this mode of

treatment, and in no instance has it failed, with the exception of one, when the administration of chloroform was delayed till the patient was almost in the agonies of death.

"My plan of treatment in this hitherto incurable disease is as follows: On the first symptoms, I give a drench composed of thirty drops of Croton oil, intimately rubbed in a mortar with thick mucilage of gum arabic, and gradually diluted with a pint or a pint and a half of good ale. Immediately on the drench being swallowed, the patient must be bled profusely, put in a warm stable, and, if the weather be cool, carefully covered with rugs. Now is the time to use the chloroform: four ounces will be sufficient for an application; and a convenient mode of applying it is, to make a temporary nose bag of soft material, and as air-tight as possible: in the bottom of it place a sponge, and on this pour the liquid: by introducing the horse's nose, and tying the bag round and above the nostrils, he will be obliged to inhale, and in a few minutes will be well under its influence. Upon rising, the muscles will have lost the rigidity peculiar to the disease, his nervous system will have become quieted, and his face have lost that anxiety of expression which accompanies lockjaw.

"The chloroform must be repeated three or four times, say an hour apart: on the horse's recovery, his strength should be supported by light and nutritive food; and, if the weather be warm, turning him out in a pasture two or three hours a day will extend the muscles of his neck, and bring him to the use of his limbs.

"I would suggest that hand-rubbing of the extremities during the applying of the chloroform will be highly beneficial.

MANGANESE IN GLASS.—Some curious phenomena connect themselves with the use of manganese in glass. If the quantity employed slightly exceeds that which is necessary to prevent the peroxidation of the iron, or if the glass has been exposed to too long continued or too great a heat, it assumes a fine pink or rose colour. Indeed, where glass contains an excess of manganese, although it may preserve its desired whiteness, it will, under the influence of sunshine, slowly change, and become gradually more and more pinky. This change may be frequently observed in the glass of the windows of old mansions; and it is not an uncommon occurrence, that a ship proceeding to tropical climates with white glass in her cabin windows, returns home with glass of a fine rose tint. Much of the common cast flint glass which is in the market is distinguished by this peculiar colour, produced by the employment of an excess of oxide of manganese.—*Art. Journal.*

GETTING MORE PRACTICAL.—We are happy to find that there is an opinion prevailing more or less throughout the community, that it is time the course of education in our seminaries should have a more practical tendency. Yale College and Cambridge have now their professors of Agriculture. What would have been thought, forty or fifty years ago, of a professor of agriculture in one of those stately old colleges, where the sight of a farmer would have been considered as much out of place as a pig in a pulpit! We see it noticed in the journals of the day, that the trustees of Union College contemplate such an extension of the existing course of studies as to include the more useful application of science to the arts, such as civil and mechanical engineering, agriculture, and agricultural and mechanical chemistry, &c. &c. We hope that the colleges throughout the Union will change their course of studies in such a way as to embrace a practical course of the above-named studies.—*Maine Farmer.*

GEOLOGICAL TERMS.—Stratified mountains or rocks are those which are composed of layers or plates of stone separated like the leaves of a book by parallel seams; these plates are denominated strata; they extend through the whole mountain or mass, their length and breadth being much greater than their thickness. If the thickness of any stratum exceed two or three feet, it is more usually denominated a bed; and if it lie between beds of stone of a different kind, it is said to be imbedded. Strata always decline or dip down to some point of the horizon, and of course rise towards the opposite point. A line drawn through these points, is called the line of their dip; another line drawn at right angles to this, marks the course along which the strata stretch out to the greatest extent; it is called the line of bearing. If a book be raised up in an incline position, with the back resting lengthways upon the table, the leaves may be supposed to represent different strata; then the direction of the leaves from the upper edges to the table will be the line of dip, and their direction lengthways the line of bearing; and the angle they make with the table will be the angle of inclination. Strata are, however, sometimes waved or bent in both their directions, and are frequently broken; which makes it more difficult to ascertain their true position.—*Bakewell's Geology.*

INJURY FROM BLEEDING.—The two frequent use of the lancet, which Dr. Reid called a "minute instrument of mighty mischief," is thus condensed by Dr. Brigham, in his report of the Utica Lunatic Asylum, to the New York legislature:—

"Many of the patients sent to this institution have been injured by too much bleeding and depletion before they were committed to our care. Some, we think, have been rendered incurable by this treatment; and we cannot forbear remarking, that in our opinion the work of Dr. Rush on the "Diseases of the Mind," in which directions are given to bleed copiously in maniacal excitement, has done much harm, and we fear is still exercising a bad influence; and we hope no future edition will be issued without notes appended to correct the errors into which the distinguished author has fallen for want of the numerous facts which have been furnished since his time, and which enable us to see the errors of our predecessors."

KEEPING LEMONS FRESH.—I have been a house-keeper for some years, and never, till lately, have I been able to keep lemons fresh and juicy for any length of time. But with all my care,—now in this closet, now in that—now wrapped in paper, now packed in bran—now in a cool place, and now in a dry one,—they would dry up and become hard as wood. Of late, however, I have preserved them perfectly fresh three months in summer, by placing them in a closely covered jar, or pot, kept in the ice-house.

Each lemon is wrapped up in paper, (perhaps they would do as well without,) then opened and wiped once in ten or twelve days, then covered again with dry paper, and put back again into the jar, or earthen vessel, on the ice. MOTHER HUBBARD.

—*Am. Agriculturist.*

TO TRAIN A HORSE TO THE HARNESS.—You must be very gentle with him. You may commence by throwing a rope over the back and letting it hang loose on both sides; then lead him about, caressing him, until he becomes satisfied that it will not hurt him; then put on the harness, and pull gently on the traces. In a short time, by this kind of treatment, he will be prepared for work.

HOOF-AIL IN CATTLE.—The disease, sometimes called "foul in the foot," is most common in open winters, or when cattle are obliged to travel or stand much in mud. It is known by lameness, soreness between the claws of the foot, with inflammation, and, in advanced stages, discharge of fetid matter, which issues from between the hoof and the foot. A separation of the hoof after a while takes place, and if the disease is not checked, the hoof sometimes comes off. Though the disease, like foot-rot in sheep, is believed sometimes to originate spontaneously, there is good reason to believe that it is contagious; and, on this account, an animal, as soon as it is affected, should be kept by itself. The best remedy, if used when the disease first manifests itself, is blue vitriol or sulphate of copper. First wash the foot in soft soap-suds, and then apply the solution of vitriol to the affected part twice a day. If the disease is of long standing, the hoof should be pared away from the upper edge, the offensive matter taken out as thoroughly as possible, and an ointment of corrosive sublimate and lard applied. The animal should be kept from wet, and, if the foot is much sore, it should be protected by a bandage of strong cloth.—*Albany Cultivator.*

RESPIRATION.

A man makes on an average twenty respirations per minute, and at each inspiration inhales 16 cubic inches of air; of these 320 cubic inches inhaled 32 cubic inches of oxygen are consumed, and 25 cubic inches of carbonic acid produced. These are data for our consideration; and I trust will lead many to think seriously about making their knowledge practically useful. The following extract from the pamphlet of Mr. Ritchie, published this year on the ventilation and warming of factories, puts in a very clear manner the importance of pure air. He says, 'If the various convolutions of the air-cells of the lungs were spread out, they would present a surface *thirty times* as extensive as the surface of the body; that over this extensive surface, through exceedingly minute vessels, the entire blood of the body passes every three minutes; that we respire every twenty-four hours a quantity of air that would fill upwards of seventy-eight hogsheads, and the blood passes upwards of 500 times in the course of the day through the lungs, exposed to the enormous quantity of air which we respire.'

THE LAWS OF HEALTH.—Let us learn from prize-fighters. In the regimen that prize-fighters submit themselves to, we may see the secret of acquiring the greatest strength and power of endurance. It is to be strictly temperate in all things; to avoid all debilitating stimulants, such as alcoholic drinks, tea, coffee, tobacco, &c.; to rise early; to take abundance of exercise in the open air; to bathe often, and observe the most rigid system of cleanliness, and abstain from all licentious practices. Those noted for pedestrian feats subject themselves to the same regimen. If it may be done from such ignoble motives, how much easier should it be to practice the same system for the greatest of blessings—health!—*Philadelphia Ledger.*

Swarms of locusts, or grasshoppers, have appeared in Texas, literally covering the ground in some places, and devouring the wheat and corn. In other parts of the State, the corn and cotton have been injured by the cut-worm.

Editors' Notices, &c.

G. W. will find, on our outside page, full particulars of the approaching exhibition of the *Provincial Association* at Kingston. Any further information can be obtained by addressing the Secretary, Mr. Buckland, Toronto; or G. A. Cumming, Esq., Secretary of the Executive Committee, Kingston.

PRACTICE.—We agree in the main with the purport of your remarks, and feel obliged for your suggestions and promised aid. We are anxious that our journal should possess a *practical character*, and therefore hope that the number of contributions from farmers and gardeners will continue to increase. If only three or four intelligent and enterprising individuals in each district, would send us occasional information derived from their own experience and localities, our journal would soon become, what we are most anxious to make it, an efficient medium of communication, in all matters relative to agriculture, gardening, and the mechanical arts, for the whole of Upper Canada.

A LOVER OF SCIENCE is informed that our pages are always open to popular articles on any branch of physical science having reference to agriculture, the mechanical arts, or the phenomena of nature. The particular topics to which he alludes will probably be taken up in due course by our esteemed correspondent, who is obligingly furnishing us with a most interesting series of papers, under the head of "*Scientific Notices*;" a series which we are happy to learn from several quarters is giving much pleasure and satisfaction to a large number of our readers.

T. S.—The note containing your inquiry respecting the *turnip fly* was mislaid. Many preventives of this destructive enemy have been recommended, but none can be regarded as infallible in all cases. We have often found the application of *quick lime*, or even dry soot or wood ashes, when the plants are first appearing, to be effectual. Sow broadcast, early in the morning, when the dew is on; and repeat the process, if necessary, after a few days. Some recommend sowing white mustard with turnips; and we have known several instances of success. The mustard vegetates quicker than the turnip, is very succulent and much liked by the fly, giving therefore the turnip an opportunity of getting into rough leaf, when it may be considered comparatively safe.

NEW YORK AGRICULTURAL SOCIETY.—We are indebted to the kindness of B. P. Johnson, Esq., of Albany, for a copy of the premiums, &c., of this important society, with several papers, which appear to be of a very valuable character, belonging to the forthcoming volume of the society's transactions. Preparations for the next exhibition, to be held at Syracuse, in the second week of September, are making on a very extensive scale; and we have no doubt the State of New York will not fail to do justice to its high agricultural character on this occasion. We hope as many Canadians as possible will attend, and also to have the compliment amply returned at Kingston; for nothing but mutual good can result from different countries cultivating friendly intercourse and the arts of peace.

INQUIRER.—We cannot just now reply to your questions in detail, respecting the action of salt as a manure for land and a condiment for animals. Of its value for the latter purpose, especially in countries but feebly affected by oceanic influences, there can be no doubt. We would recommend as a beneficial prac-

tice the sprinkling of salt among hay when it is housed, especially if it is damaged by bad weather. The same remark applies with still greater force to straw, when it is intended for fodder. Cattle will more readily eat it, and the saline matter taken into the stomach acts beneficially on the general health of animals. As a manure, salt has by some writers been much over-rated; but in countries far removed from the sea, and where salt springs do not exist, it is no doubt susceptible of a beneficial application. We will return to this subject shortly.

TORONTO MARKET.

		July 2, 1849.			
		s.	d.	s.	d.
Flour, per brl. 196lbs.	- - - -	16	3	to	21 3
Wheat, per bushel, 60lbs.	- - - -	3	6	to	4 4
Barley, per bushel, 48lbs.	- - - -	1	6	to	1 9
Rye, per bushel, 56lbs.	- - - -	3	0	to	3 4
Oats, per bushel, 34lbs.	- - - -	0	10	to	1 0
Oatmeal, per bbl. 196lbs.	- - - -	16	3	to	20 0
Pease, per bushel, 60lbs.	- - - -	1	6	to	2 0
Potatoes, per bushel	- - - -	2	0	to	2 6
Beef, per lb.	- - - -	0	2	to	0 3½
Beef, per 100lbs.	- - - -	20	0	to	25 0
Veal, per lb.	- - - -	0	2½	to	0 4
Pork, per lb.	- - - -	0	2½	to	0 3½
Bacon per 100 lbs.	- - - -	25	0	to	30 0
Mutton, per lb.	- - - -	0	2½	to	0 3½
Mutton, by the carcase	- - - -	0	0	to	0 0
Lamb per quarter-	- - - -	2	0	to	3 0
Fresh Butter, per lb.	- - - -	0	6	to	0 7
Firkin Butter, per lb.	- - - -	0	5	to	0 6
Cheese, per lb.	- - - -	0	3	to	0 5
Lard, per lb.	- - - -	0	3½	to	0 0
Apples, per barrel,	- - - -	10	6	to	15 6
Eggs, per dozen,	- - - -	0	5	to	0 6
Fowls, per pair	- - - -	1	8	to	2 6
Straw, per ton,	- - - -	25	0	to	30 0
Hay, per ton,	- - - -	45	0	to	50 0
Fire Wood	- - - -	10	0	to	12 6

TORONTO HORTICULTURAL SOCIETY.—The next exhibition will take place on the 17th, instead of the 19th instant, as mentioned in another place.

MARKETS, &c.—From the latest intelligence received from England (June 22), we learn that the grain markets continued heavy, and prices stationary. The reports of the growing crops were upon the whole highly favourable; although we learn from private sources that much of the wheat in some parts of the south of England had been injured by the snail and worm. Hops were suffering severely from aphides; so much so that a moderate crop seemed to be doubtful. Orchards and gardens presented a remarkable luxuriance, the weather being very warm and favorable; although pear trees and unprotected wall fruit appear to have suffered from the unusual severe frosts which occurred in April. Green crops, hay and potatoes, were very promising. In Upper Canada, wheat may be said to be generally good, and the spring crops are now making rapid progress. Hay in most places will be abundant, and the potatoes seem as yet sound and thriving. The lateness of the spring, connected with the extreme wet weather which then generally prevailed, will no doubt in some cases retard the progress of the late crops. We hear that in some parts of the country, particularly in Lower Canada, that want of rain is beginning to be severely felt. On the whole, however, we are inclined to think that, with the continuance of favorable weather, the fruits of the earth will prove abundant.

We insert, for the full information of our readers, the following Programme of the Provincial Agricultural Show, to be held in Kingston in September next, as published by the Committee of Management:

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On September 18th, 19th, 20th, and 21st, 1849.

THERE will be expended in Premiums, in the various branches of Agricultural and Horticultural Productions, Implements of Husbandry, Manufactures, Mechanical Inventions, Fine Arts, &c. &c. the sum of from TWELVE to FIFTEEN HUNDRED POUNDS, the particulars of which and Premium Lists (which will be liberal) will be prepared and made known as early as possible.

The ground selected for the Show is delightfully situated, and commanding a splendid view of the River St. Lawrence and Lake Scenery. Persons desirous of competing at the Show must become Members of the Association, which they can do by paying 5s. per annum, or \$10, which constitutes Membership for Life.

Members will have the right of entering for Competition *Three Articles free of charge* (all Entries over that number 7½d. each), and will be furnished with a Badge, which will entitle them to a Free Entry to the Show Grounds.

FIRST DAY.

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At the close of the Show, open to all Competitors.

Ample accommodation will be provided for Visitors, and pledges have been received that the ordinary rates only will be charged at the principal Hotels, Taverns, and Boarding Houses, of which there are over one hundred and fifty in the city and immediate vicinity. Spacious Buildings will be erected for the reception of

all articles intended for the Show, and their protection and security suitably provided for; and particular attention will be given to the LADIES' DEPARTMENT.

The Executive Committee will meet on the Show Ground, on Wednesday, the Second Day, at 10 o'clock, when the Judges are requested to attend, as on that occasion all vacancies will be filled. Members of the Society are requested to call, on their arrival, at the Secretary's Office, and receive their Badges. Entries may be made at any time previous to the Show, with the Secretary, GEORGE A. CUMMING, Esquire, care being taken by the parties to make the entries in the owner's name, which will prevent confusion in calling over the premium lists for payment.

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Kingston, June 30, 1849.

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WANTED TO RENT.

A FARM of about 100 Acres, well cleared, the soil to be of excellent quality, well fenced and in good cultivation. The house, barns, and other necessary out-buildings, to be in a good state of repair. The farm not to exceed 4 or 5 miles from a town. The preference will be given to one with a good running stream through it.

All communications, stating fullest particulars, rent, &c., to be addressed (post paid) to D. J., Post Office Box 212, Hamilton.

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Nearly one-third of the work is devoted to the religious education of Girls, showing its influence upon the happiness and prosperity of families and communities. The author believing that this part of education is too much neglected, where it can most efficiently be attended to—at the fireside—has been induced to extend her remarks upon this part of the subject.

This work will contain about 200 pages 12mo, and will be delivered to subscribers at the low price of 2s. 6d. per volume.


Toronto, 8th March, 1849.

7

**WM. M'DOUGALL,
ATTORNEY, SOLICITOR, &c.,**

South West Corner of

**KING AND YONGE STREETS,
TORONTO.**

 *Deeds, Mortgages, and other Legal Instruments promptly prepared.*

**PHENIX FOUNDRY,
No. 58, YONGE STREET, TORONTO.**

GEORGE B. SPENCER,

(LATE C. ELLIOT.)

CONTINUES every Branch in the above Establishment, as heretofore; and, in addition, keeps constantly on hand a good assortment of Cooking, Parlor, Box, and Air-Tight Stoves, of the most approved patterns.

Also, a Second-hand Engine, with or without the Boiler, Twelve-horse Power, will be sold very cheap for Cash or short payment.

Toronto, Jan. 26, 1849.

1-tf

MAMMOTH HOUSE,

Removed to the Store next door South of Mr. Elgie's Tavern, Market Square.

THOMAS THOMPSON is happy to inform the Public, that, by the praiseworthy exertions of his friends, he has saved from the destructive *Conflagration of 7th April*, staple and fancy DRY GOODS, GENERAL CLOTHING, HATS, CAPS, BOOTS, SHOES, &c. &c., to the amount of upwards of \$15,000! partially damaged, which will be sold at a great sacrifice. The above Stock, with the early *Spring Arrivals* now opening out, will comprise a splendid assortment of *cheap and fashionable Goods*, the whole of which he is determined to have cleared out previous to his re-opening the new Mammoth House.

Toronto, 17th April, 1849.

SEVERN'S BOTTLED ALE.

THE Subscriber, having resumed his former Business in a convenient locality, with a large stock on hand, of a superior quality, and in prime condition, would hope to secure a continuance of the patronage and support hitherto conferred upon him.

J. D. BARNES,

6, Wellington Buildings.

Adjoining Mr. Sterling's, King-st.

Toronto, Jan., 1849.

JOHN M. ROSS,

A GENT for Hall's Patent Moulding and Pressing Machine; also, for the Genesee Agricultural Seed and Implement Warehouse, Rochester, N. Y. City Wharf, Church Street, Toronto :
20th March, 1849.

PAPER HANGINGS!

A LARGE and CHOICE assortment of PAPER HANGINGS, of the *newest styles of patterns*, for Sale, wholesale and retail, by

BREWER, McPHAIL, & CO.,

46, King Street East.

Toronto, April, 1849.

5-lin.

BRONTE MILLS FOR SALE.

THE Property consists of sixteen feet privilege on the Twelve-Mile-Creek on the Lake Shore, in the Township of Trafalgar, and about seventy-five acres of good cleared farm Land; a large stone and frame Woollen Factory, 82 feet by 32 feet, and three stories high, capable of being easily converted into a Flouring Mill; a Grist Mill, with one run of Stones, Smut Machine and all requisites; Two Saw Mills, with Circular Saw; Lumber Yard Railway; a Blacksmith's Shop and several Dwelling Houses. This property is now let on a yearly tenant for £200 per year, and would bring on a lease £250. Price £2,500, of which only £100 would be required down; the residue might be paid by instalments as agreed upon.

ALSO,

A Privilege on the same Creek of 12 feet, next above the Mills, with about 75 or 80 acres of land, mostly cleared and in cultivation, and an excellent Mill Site, with good Roads. Price £1000, of which £300 would be required in Cash; the remainder by instalments. The option of this part of the property is offered to the purchaser of the first, and, if not taken, it will be sold separately.

ALSO,

Adjoining the above, a Farm of about 70 acres, in full cultivation, with a large unfinished Dwelling-House thereon, and an Orchard of four acres of grafted Fruit Trees. Price £700, of which only £200 would be required immediately; the rest in ten years. The whole of the above property will be sold together, if desired. For particulars apply (post paid) to S. B. Harrison, Judge H. D. C. Toronto.

Toronto, March 1, 1849.

STOVES! STOVES!! STOVES!!!

**J. R. ARMSTRONG,
CITY FOUNDRY,**

No. 116, Yonge Street, Toronto,

HAS constantly on hand Cooking, Box, Parlour and Coal Stoves, of various patterns and sizes, *very cheap for cash*.

Also, a New Pattern Hot-air Cooking Stove, just received, taking three-feet wood, better adapted for the country than the Burr, or any other Stove now in use. It has taken the First Premium at every Fair in the United States, where it has been exhibited.

Ploughs, Sugar Kettles, Grist & Saw-Mill Castings, Steam Engines, Sleigh Shoes, Dog Irons, and a general assortment of Castings.

SHOE AND LEATHER STORE.

DANIEL FARAGHER begs to inform his friends and customers that he has opened a *Shoe and Leather Store*, at No. 22½ Yonge Street, Toronto, where he will be prepared to furnish all kinds of work in his line at the most reasonable prices. Having a Tannery of his own in active operation, he can supply the trade and others with as good an article of Leather, and at rates as low, as can be obtained elsewhere.

DANIEL FARAGHER.

January, 1849.

1-tf.

MESSRS. DENISON & DEWSON, Attorneys, &c., *New Market Buildings*, Toronto.

January 26, 1849.

2

CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. v. 9.

GEORGE BUCKLAND, }
WILLIAM McDOUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, AUGUST 1, 1849.

No. 8.

The Canadian Agriculturist,

A MONTHLY JOURNAL OF AGRICULTURE, HORTICULTURE, MECHANICAL AND GENERAL SCIENCE. DOMESTIC ECONOMY & MISCELLANEOUS INTELLIGENCE: Published by the Proprietors, W. McDougall and Geo. Buckland, on the first of each month, at their Office, near the South-west corner of King and Yonge Streets, Toronto.

Subscription ONE DOLLAR, *in advance*. Advertisements 4d. per line each insertion.

Societies, Clubs, or local Agents ordering twelve copies and upwards, will be supplied at 3s. 9d. per copy.

Money, enclosed in a letter, and addressed to the "Editors of the Agriculturist, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, *need not wait to be called upon*.

Payment *in advance* being the only system that will answer for a publication so cheap as ours, we shall send the remainder of the volume to none but those who *order and pay for it*.

LOCAL AGENTS.—Any person may act as local agent. We hope that all those who have heretofore acted as such will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending *four* subscriptions. Those sending *twelve* and upwards will be supplied at 3s. 9d. per copy.

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2

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FOR SALE, an extensive collection of FRUIT TREES, consisting of all the choicest sorts of Apples, Pears, Plums, Cherries, Peaches, Grape Vines, Raspberries, Gooseberries, Strawberries, Currants, Asparagus, and Rhubarb Root, &c.

Also, Ornamental Trees, Flowering Shrubs, Hardy Roses, Herbaceous Flowering Plants, &c., in great variety.

Descriptive Catalogues, containing directions for transplanting, furnished *gratis* to post-paid applicants.

GEORGE LESLIE.

March, 1849.

4

CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash Prices for 1000 bushels clean Timothy Seed; 100 bushels clean Spring Tares; 100 bushels White Marrowfat Pea; and 25 bushels Flax Seed.

JAMES FLEMING,

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Toronto, Jan. 1, 1849.

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No. 8.

IMPROVED BREEDS OF CATTLE.— IMPORTANCE OF THE DAIRY.

In our last number, we mentioned an experiment made by the Messrs. McDonald, of Gananoque, in feeding cattle of the Canadian and improved breeds, the result being in all respects favorable to the latter. The subject has again been brought under our attention, by the opportunity which we had a few days since of going over the farms and seeing the splendid herds of those two eminent breeders, so well known both here and in the States, and we might also add the old country, the Hon. Adam Fergusson, of Woodhill, and John Wetenhall, Esq., M. P., of Nelson. Their stock consists of some very fine specimens of the Durham; and what is of such high importance in these matters, the strictest attention has been paid to preserving the *purity* of the breed. While looking at the stock and heavy crops of these gentlemen, on a spot which but a few years ago was an unbroken forest, we were strongly reminded of certain localities in the old country endeared to our remembrance, and could not help thinking, to what an incalculable extent the agricultural wealth of Canada might be increased by efficient cultivation, a judicious system of rotation, and improved breeds of stock.

In calling the attention of our readers to the subject of cattle, we are fully aware that it is not practicable that our farmers can generally and at once obtain the best and purest breeds. Even if that object were obtained, the difficulties of *retaining* purity of blood and first rate animals are so great, requiring the constant exercise of correct observation and judgment, as well as much expense, that the herds of no inconsiderable number would soon deteriorate. This, however, is no valid reason against a general effort being made to improve our breeds of cattle; for every step taken in that direction would increase the farmer's profits, and render less difficult the way to a yet higher progress.

There can be no doubt that if the farming public were sufficiently awake to the vital importance of this subject, and prepared to spend a few dollars, which in a short time would be converted into as many pounds, a number of intelligent and enterprising breeders would spring up in different parts of the country, that would soon be adequate to the wants of the public. But while men are so penurious and short sighted as to deprive themselves of the advantages of a good bull, of well known pedigree, for the sake of a dollar, we confess our inability to see how the live stock of the country is to be materially improved.

We are not willing to take upon ourselves the responsibility of urging the special claims of any particular breed. Situation, soil, climate, &c., must form essential elements in all such considerations, and the final decision must be determined by practical experience. The short horns possess a great number of valuable qualities, and, taking them upon the whole, may be said, perhaps, to excel any other breed for general purposes. They are good feeders, come early to maturity, and are for size unrivalled, an object of great moment where butcher's meat fetches a remunerating price. Much may be said in favor of the Ayreshire, Hereford and Devon breeds; the first we think particularly adapted to this country, especially for dairy purposes, for which they have the credit of being better suited than the pure Short-horn. At all events, let the farmer get a cross from his best native cows and a good bull of any of the improved breeds, and we venture to affirm that he will find the result profitable; he will possess a race of cattle either for the butcher or the dairy, very superior to any thing he had before, with the important advantage of arriving at maturity in half the time. In making the latter observation, we of course assume that the young stock are kept and treated in a proper manner, particularly during winter, when much injury frequently arises from want of sufficient protection and nourishing food.

The subject of the dairy is one that must continue to possess an increasing interest to the Canadian farmer. Much of our soil is well suited for dairy purposes, and this business might no doubt be made profitable in many localities, if conducted with care and judgment, upon proper principles. It is of importance to bear in mind that the *quality* of the article which we produce, especially for a distant market, should be a first consideration. The Americans have made of late years great improvements in the cheese they export to England, which of course obtains a higher price; and it would appear that they are fast increasing this, an already important branch of business, from the fact that they have recently been purchasing large numbers of cows in various sections of this country. What, we ask, should prevent the Canadians from doing a profitable business in butter and cheese in the markets of the mother country? The first thing to be done is to direct the attention of our farmers earnestly and practically to the subject.

In pursuing the routine of the dairy business, next to a selection of good cows (a cross of the best natives with the improved breeds will generally be found to answer well), follow considerations of management, feeding, &c., all which require to be done on a strict uniform system. Without suitable pastures, covered with a healthy growth of the cultivated grasses, it is in vain to hope for a copious supply of good milk. When the pastures become parched, in the latter end of summer and autumn, cows might be advantageously fed on the fresh stalks of Indian corn, sown thickly for that purpose. A cool, capacious, well-ventilated cellar, properly supplied with pure water (if a running stream can be obtained all the better), with the most scrupulous attention to cleanliness in every department of the management, are among the most essential requisites of a good dairy.

Since writing the above, we have met with the following excellent observations on the subject of cattle, in our cotemporary *The Church*, forming a portion of its monthly agricultural article for July. Although somewhat long, we readily transfer them to our own pages, for the information of our readers.

NEAT CATTLE.—The term cattle, in its most extensive sense, is used to denote all the larger domestic animals which are kept on the farm. In the more usual acceptation, it is applied to animals only of the ox kind, which are also called black and horned cattle; but as all are not black, and many are without horns, the technical term,

"Neat Cattle," is used as more definite and appropriate.

During the early part of summer, in the months of June and July, is the proper period to pay attention to the improvement of this description of farm stock. There is no very exact time at which it is the custom to have calves dropped. It depends a good deal on the purpose for which the cows or calves are required, and is also often determined by accidental circumstances. When the cows are required to give as much milk as possible during winter, or for the making of butter during that season, it is often the custom to have them calve in December or January. If the calves are intended to be sold as veal, early in the spring, they are dropped in February or early in March; but if to be kept as stock, and the cows for the making of spring and summer butter or cheese, the most usual and the best time is in the month of April or early in May, when the pastures are beginning to afford a supply of food.

The period of gestation of the cow varies very considerably, having been ascertained to have been in some instances less than 240 days, and in others more than 300 days. But any period less than 260 days, or more than 300, must be considered as irregular—though in the latter case the health of the calf is not affected. In the majority of cases, the period may be stated as extending from the 270th to the 300th day, or on the average about 284 or 285 days. [*Farmer's Dictionary.*] This being about nine calendar months and a week, it is easy in ordinary cases to regulate the time of calving of the cows, by that at which we allow them to be sent to the bull. In obtaining the services of a bull, it may be considered unnecessary to say that it is important to have an animal of as good a description as possible; but it might in reality be supposed, from the very inferior specimens that are frequently seen made use of in many parts of this country, that the fact was not known—or if known, that many farmers were determined not to pay any attention to the matter. We have seen this spring, and could point out in any year during the months of May and June, a hundred calves of a year's growth on the roadside in different parts of the country, any one of which would not weigh on the scales more than many a well-bred thrifty calf of five weeks' age, that is, say just a year younger—mere dwarfish little bundles, in fact, of bones, paunch and skin. Now, this unthrifty state of things is to be attributed, in the first place, to the want of a little attention in the selection of animals to breed from; and, in the next place, to the great neglect in the rearing of the young animals during the first summer and winter. The fact is, that there is a great want of spirit and proper exertion among many farmers in this respect—a grudging of a little present expense and trouble, even when they will acknowledge that it would repay them tenfold. Numbers of spirited breeders in different parts of the province have indeed imported very superior animals at great expense and trouble, and many others have benefited largely by their enterprise—large numbers of well-bred and superior grade animals, of the improved breeds, being

now found in many places; but on the part of the farming community at large, it must be confessed that there has not been that spirit in improving their own stock, by encouraging the enterprise of the importers of well-bred cattle, which might have been expected.

In endeavouring to improve our stock of neat cattle, we must be governed in our choice of individuals to breed from by the quality of those within reach, the best of which, especially of the male animals, should always be obtained. If the farmer does not go to the expense of purchasing highly-bred heifers or cows, he should at least take the pains to select and preserve the best of the native or common ones, as a foundation for an improved stock, and obtain for them the best bull within reach. By pursuing this course, and slaughtering or rejecting as breeders all the inferior young animals produced, a great improvement will soon be effected.

It is frequently a subject of inquiry, which of the different varieties of cattle are the most profitable? This must depend a good deal on the particular purpose for which they are required, whether for the shambles, the dairy, or the yoke, as well as on the climate and the quality of the land where they are to be kept. Different varieties have also their advocates, as much perhaps from mere partiality as from any peculiar intrinsic merit. In order to afford the farmer who is desirous of effecting improvement, but may perhaps not have a sufficient acquaintance with the subject, an idea of the requisite qualities of a good animal, whatever the breed, we may allude to what graziers and breeders call the fine *points* of an ox; and in this we prefer making use of a good authority—the Rev. W. L. Rham (article “Cattle”)—“There are certain forms and appearances, which are either anatomically connected with a perfect conformation of the body, and especially of the organs of respiration and of digestion, or which are constantly associated with the peculiar qualities of certain breeds, so as to be proofs of their purity. Of the first kind are—a wide chest, well-formed barrel, strong and straight spine, hip bones well separated, and length of quarter; all of which can be proved to be essential to the perfect functions of the body. Small and short bones in the legs give firmness without unnecessary weight. A thick skin, well covered with hair, ensures proper warmth; and its soft, loose feel indicates a good coat of cellular substance underneath, which will readily be filled with deposited fat. All these are indispensable points in an ox which is to be profitably fattened, and, whatever be the breed, they will always indicate superiority. Other points, such as colour, form of the horns, shape of the jaw, and setting on of the tail, with other particulars, are only essential in so far as experience has observed them in the best breeds, and as they are indications of pure blood. The eye is of great importance; it should be lively and mild, indicating a healthy circulation, with a gentle and almost indolent temper. An animal that is not easily disturbed will fatten rapidly; while one that is restless and impatient will never acquire flesh. Among the ancients, a deep dew-

lap was considered as a great beauty in an ox. In some of our best breeds there is scarcely any. The rump of the Freyburg cow rises high towards the tail; while a straight back, from the neck to the tail, is indispensable in a well-bred British ox.”

Among the improved breeds introduced into Canada, the Short Horns, or Durhams, are perhaps the greatest favourites, and are most extensively known. They are also probably the most profitable for general purposes. In colour, they are generally light, sometimes quite white. The horns of the pure-bred animal are quite short; sometimes, in the finest bulls, a mere tip on each side of the forehead. In the carcass, they combine every point which has been mentioned as essential to perfection. They are perfectly hardy, bearing all the variations of this climate quite as well as the native breeds, and returning, with fair keep, as great a weight for the butcher at three years old, as the common cattle do at six. A prejudice has sometimes existed against the Durhams, on the supposition that they were indifferent milkers; but the contrary is in reality the fact, the purest Durham cows having proved to yield a large quantity of milk, or, speaking technically, to be very *deep* milkers.

Next to the Short Horns may be classed the Ayreshires: they are indeed by some breeders preferred to the former, although their right to be considered as a distinct breed has been frequently disputed. They resemble the Durhams very much, except in point of size, and are hence sometimes supposed to have originated from a cross of that breed with some smaller variety. Although not so handsome an animal as the Durham, they have very good qualities, being very hardy, and excellent for the dairy or the shambles.

The only other improved breed well known in Canada is the Devon. In colour they are invariably a deep red, with a bright eye, fine head, small bone, glossy hide, and fine long horns. They are a very handsome breed, and, though smaller, are by some preferred to the short horns. The oxen are excellent for purpose of draught, being very active, and walking almost as fast as horses. The cows are of good quality for the dairy, the milk being of superior richness. The Devons fatten easily, and their flesh is of superior quality.

These are the most important British breeds well known in Canada; the other principal varieties, as the Hereford, Sussex, Leicestershire, Teeswater, and others, not being much known. It is to be hoped that ere long the importance of paying attention to the breeding of improved cattle will be more fully appreciated. There is now, perhaps, scarcely any section of the country in which a more or less well-bred bull, of one or other of the improved breeds, may not be found at no great distance; so that there is at least the opportunity of making improvement, if it is but made use of. Many of the common cattle of the country are of very good quality as milkers. By selecting the best of these, and obtaining the services of a well-bred bull for them, and paying greater attention in regard to proper care and feeding, the

weight and quality may be very much improved, without detriment to the milking properties. We do not wish to be understood in these remarks as implying that there has been no advance made in this respect. The advance has been very great—thanks to the enterprize of spirited individuals—but much yet remains to be done.

ON PRACTICAL FARMING, ROTATION OF CROPS, MANAGEMENT OF STOCK, &c.

(Communicated to the Johnstown Agricultural Society, by John Bland, Esq., Brockville.)

As a preliminary to successful cultivation, all experience has proved the necessity of clearing and draining lands well and carefully, as circumstances admit and demand. This being done, the following rotation of crops may be judiciously adopted in each and every soil; always taking it for granted that the farmer, in addition to his own knowledge and experience, avails himself of the example and advice of his elder and more experienced neighbours.

My experience favours the following rotations of crops, on the soils to which allusion shall be made, modified by all and sundry circumstances which may arise from seasons, localities, &c.

SANDY SOILS.

1st year.—*Potatoes*.* well manured and scattered abroad, immediately ploughed in and as carefully harrowed. *Red* and *white* potatoes are two kinds well known. The former prefers a clay soil, the latter a sandy or loamy soil. Should be planted whole and a reasonable distance apart each way. Should be kept clean, but not too much covered up by ploughing, as air is wanted. A change of seed is found a good practice; but above all things *plant early*.

2nd year.—*Rye*: after which a crop of Buck-wheat may be raised, part of which may be consumed on the field, according to circumstances.

3rd year.—Oats and Clover, or Barley and Clover.

4th year.—Clover.

5th year.—Wheat, after which Buck-wheat, which use the same as recommended in second year.

6th year.—Peas, and associated with oats, &c. Here are eight crops in six years, five of which are ameliorating to the soil.

LOAMY SOILS.

1st year.—Potatoes.* culture, seed, &c., the same as before mentioned.

2nd year.—Wheat and afterwards Buck-wheat as before recommended.

3rd year.—Indian Corn and Pumpkins.

4th year.—Barley and Clover.

5th year.—Clover.

6th year.—Wheat and Buck-wheat as before.

CLAY SOILS.

1st year.—Oats and Clover.

2nd year.—Clover.

3rd year.—Wheat followed by Buck-wheat.

4th year.—Beans, previously well manured.

5th year.—Wheat.

6th year.—Peas and Oats.

Having given a brief summary of rotations, which must be modified according to soils and circumstances, I shall now proceed to refer more particularly to each kind of produce, and the most approved mode of culture and general management.

The potato has now become an universal favourite in every country, as approved food for man and also for beast. Some little more care than is at present bestowed on its culture is well deserving our zealous industry. Two ways are open to our practice, namely, 1st, by sowing the seed, and 2nd by planting the root. The former method gains us many varieties, but three years are necessary ere such come to maturity. Hence the 2nd method, planting the root, returns the exact variety or kind; and it is almost the universal practice, its success merely depending on the selection of the soil, and the skill of the cultivator. The produce of this crop varies from 300 to 600 bushels an acre, hence the premium offered by our bounteous mother Earth is far above all other offers. The potato is generally understood to be a native of this Continent, and is now considered the next staff of life to bread, being, as analyzed by a French chemist, said to contain in relation to bread the following nutrition.

Bread, every 100 lbs., 80 lbs.

Potatoes, every 100 lbs., 25 lbs. to 35 lbs.

Spring set Potatoes (for observe fall planting is now practised with much success in Europe) should be planted if possible, from 12th to 20th May, and may remain in the ground till the end of October. Various modes of planting have been practised, and approved of. I should generally recommend whole potatoes for planting, and from experience would prefer a full medium size. Plant two feet apart, and one asunder. Put potato seed in ground covered slightly with soil, and if you have not ploughed and harrowed in your manure, put the same on the top of the seed, and afterwards a little more soil. Every shower of rain will send some food to the seed below, and if you plant in the fall be liberal with your covering, and be assured when you are sleeping and sleighing, the seed is safer and better for an early start in spring, and it has been found from experience that even seed with a slight taint of the rot has disencumbered itself of the disease. If any prefer the practice of cutting their seed, invariably bury in a bed of Plaster of Paris for some little time, and not expose to frost. This is found of very great importance in protecting the seed, and improving the produce. When Potatoes begin to appear above ground, weeds appear also, harrow well then—it saves labour afterwards. A second harrowing with a suitable implement, also much approved, which cleans all and loosens the soil, to admit both air and moisture. Well, all that remains to be done is careful and prudent harvesting and storing. Small surface hills are now practised with success, containing about 20 bushels each; cover with plenty of straw and earth, and a trench cut round to carry away all water.

* If the writer means to recommend Potatoes as a rotation crop for field culture (say ten acres), we fear it must be struck out of the list. Potatoes are seldom cultivated on ordinary farms to the extent of more than one acre. Nor do we think a more extensive cultivation would be desirable.—ED. AG.

Rye.—This is a grain less valued than it deserves, and the qualities are less known and appreciated than they ought to be. It does not compare with wheat, still there are circumstances, which as an object of culture, may give it the preference.

1st: it will grow and produce well where wheat cannot be raised.

2ndly: it endures much colder climate than wheat.

3rdly: It comes much sooner to maturity, and therefore exhausts the soil less. Indeed it is not uncommon to have two or three successive crops without manure, and the last crop as good as the first. Can be sown in the fall, and it gives good pasture without material injury to the final crop.

4thly: its produce is generally greater from an equal surface than that of wheat.

These known facts render it particularly suitable to poor soils, to high and elevated lands, and is well adapted to our high northern latitudes.

Its use and value are well known and appreciated in various parts of the Continents of Europe and America. In Germany it is regularly given to the horses in shape of bread; also in Belgium and Holland. The grain chopped and its straw cut and mixed forms the common and every day food of the horse of Pennsylvania. Its culture may be in keeping with our remarks on the potatoe crops preceding in a sandy soil. The ploughing, harrowing and manuring, given to that crop, will prepare for this. After harvesting the potatoe crop, plough the ground, and sow and harrow in the rye. Take especial care that the seed be carefully selected, and thoroughly washed in hot lime-water, then dry the seed with gypsun; and sow. Whenever the straw of rye becomes yellow and shining, cut promptly; observe to cut always early rather than an hour too late. This being done, time is given for ploughing and for next crop in succession.

Turnips.—Said to be natives of the north of Europe. There are of them eight species, and of these many varieties, but those which obtain most notice and approbation are the white in Europe, and the yellow, or *Ruta Baga*, with us.

Two methods of cultivation are adopted, suited to the end in view; say, if for enriching the soil by the turnips are then turned down by the plough; or for securing them for stall food. This latter practice seems generally the favourite mode, as it is justly considered the most economical and satisfactory. In the first case the harrow is used instead of the plough in light porous soils. The seed is sown after the harrowing, and left to itself. In the other case, the plough is used, and after it the harrow; a method generally performed, as the return will give a good equivalent for all the extra labour. Well, this done, sow your seed, say two pounds to the acre, this will allow some for accidents, &c.; when the plants are all above ground give them a light covering of ashes. Ashes which assist the growth of the young plants and save time, leeching on their leaves, protect them from the fly, &c. Soon afterwards it is a good practice to thin your plants by hand, and weed carefully. Some recommend running the plough at

stated lengths to form their land into beds, as approved culture. A second, and even third weeding and thinning is considered advantageous, as all weeds and surplus turnips are good converting manure. Then draw and top your turnips, afterwards stack, interspersing between each layer coarse hay or straw; should the season be open, it is a good practice to put on your turnip field sheep to pick up anything left there, and even after them your pigs. So much for the white Turnip; next the yellow or "*Ruta Baga*." This is usually cultivated and well known here, and a great and growing favourite in Europe, particularly in Old England, where many years ago it was successfully introduced by Wm. Cobbett, Esq. (His works generally on agriculture, from his personal experience, are well worthy of reference both in England and America). A Swedish Agriculturist says of its properties, as follows: "Its root is milder and more saccharine than that of the other species, particularly when boiled; its flesh is harder and more consistent, which better enables it to withstand frosts and to keep from one year to another. Its leaves extend horizontally, and may be stripped off from time to time as wanted for forage, without injuring the product of the root, which on a good soil gives on an acre of Sweden 350 quintals, and even in poor soils gives a crop. We sow half a pound of seed about the beginning or middle of May, which will give plants enough to fill an acre. Transplanting is performed about the last of June. To set out and water five or six hundred feet in a day is the task of one man or two women. One or two hoeings augment the product much. The harvest is made about the 1st November, and the Turnips are covered in ditches or dry cellars for winter's use."

Barley.—Of this we hear first of bread, or loaves, and among the Greeks the gladiators were called "Barley Eaters;" hence probably the modern descriptive name given to some questionable persons, namely, Loafers. At an early period it was used by the Romans as food for man, and afterwards for cattle, and this obtained favour from the general belief among that energetic people, of its nutrition and invigorating qualities. The same opinions have diffused, this grain above every other being better adapted to different climes and soils, more easily preserved and less subject to attacks from insects. I need hardly add its capacity for the production of those refreshing, wholesome and invigorating beverages, called beer, ale, and porter. Finally, it is good for cattle, and on which the Arabians bring up the horse to its greatest perfection. There are two species most in request, say "Two-Row Barley," and "Naked Barley." The former is preferred in England. It is understood to possess all the good qualities of the other varieties, and is much more productive than the latter species. The Northerns give the preference to it, and as they use this grain much as food and drink, ought to be considered good judges. Barley is not so particular as to soil as either wheat or rye, still it prefers a loose, warm, and moist soil (though not wet), and will thrive well even in sand, in succession to turnips. All

things equal, the spring crops, which are early sown, give the best and largest products. The instant that your soil is properly dry, plough at a depth not less than six or seven inches, as barley enters deeper than many other kinds of grain. If the soil is well pulverized, as it ought to be after turnips, proceed to sow your barley broad cast, and cover all with your short toothed harrow; the last operation will be to sow and roll your clover seed, being your next crop in rotation.

Clover.—This is found in many countries growing spontaneously, as shown by its names: hence Italian, Dutch, Spanish, Clover of Normandy, &c. It has been long cultivated, say for two hundred years, and is now, and has been long an article of export from England to her West India Colonies, and even to the Spanish Main; it is considered good for its effect on the soil as an ameliorating production, from its peculiar roots and leaves. It is almost invariably sown with barley or other spring grain, and rarely by itself. The advantages of this practice are three: 1st, the preparation given the soil for the grain crop, is just what should be done for the clover. 2ndly, the protection given by the barley to the young clover, against heat and dryness; and 3rdly, the improved condition in which it leaves the soil for subsequent culture. Hence in sowing the barley, care must be taken not to sow too thick, else much and serious injury may be done to the young clover for want of proper ventilation. I add two more conditions to make all certain, and to ensure a good crop: 1st, that your seed be good; and 2nd, that it be equally and regularly sown. The tests for good seed are, its comparative size and weight, the largest and heaviest being always the best. Its plumpness, its yellow or purple skin, its clearness or separation from other seeds and from dirt. The quantity of seed to be sown per acre depends in a great degree upon the soil. If good and rich, ten or twelve pounds are plenty; if poor, twenty-five pounds may not be sufficient; hence select judiciously. Never sow your clover with timothy or rye grass, as all these do not ripen alike, nor with winter grain of any kind, as much of it will perish. Better wait for the soil to acquire a temperature congenial to vegetation. By the time your barley is harvested, your clover will be able to live alone, and if not pastured, to resist the ensuing winter, and during the next summer to reward your industry by two abundant crops of grass and hay. The proper time to cut your clover, depends on various circumstances: 1st, clover cut before it flowers abounds in water, has little nutritive matter, and is apt to produce indigestion in cattle fed upon it. This is called "*hoving*," and is prevented by giving the cattle a little water before feeding. 2ndly, the stems of clover cut after seeding are hard and woody, and no longer hold the leaf. 3rdly, all plants permitted to seed exhaust the soil; to this clover is no exception. From all these facts, and to conclude, the best time to cut your clover appears to be the short period between the flowering and seeding, whether regarded as forage or as an ameliorating crop; but if seed is the principal object, the Dutch practice is probably the best; when the first crop is

cut, before it flowers, and the second is reserved for seed. Our next way to go to work will be to plough in the clover stubble, as preparing for, say,

Wheat.—This great staple of this and every other country, so useful to mankind, and forming so large a portion of human subsistence, is very fortunately found to adapt itself to a great variety of soils and climates. It grows luxuriantly in clay, in loam, in calcorous earth, and even in sand when aided by suitable manure, or a prudent succession of succulent crops. Say potatoes, peas, vetches or clover, &c. It is found in the frozen regions of the north, and in the south under the scorching sun of Africa. And it yields, according to Pliny, more than one hundred-fold. On its introduction to ancient Rome, its use soon usurped and superseded that of barley and rye, and in Europe at the present day it is christened *Corn*, par excellence. Of this invaluable grain there are four species, say, Polish, Many-headed, Spelt's, and Common Wheat. These are the kinds known generally in Europe, and here partially, but of late several others have been introduced, as the Siberian, Black Sea, Fay, Soals, &c. These varieties are now being tested in our district, but it would be imprudent to give any opinion on their merits, till sufficient time elapsed for the trial. Besides these noted, there are many other varieties, indeed so numerous that it would be useless to mention them, but the most general classification is according to colour, hence Red and White, Spring and Fall. The White Wheats are considered more delicate than the Red; but the latter, though seldom sown on rich or warm soils, are generally found most profitable, being more hardy and early on poor and inferior land, and even in a more unfavourable climate.

The most important matter to which I would call the particular care and attention of the farmer is the selection of the seed, and its preparation for sowing; without which all else is vanity and vexation of spirit. Seed selected from a good crop of the preceding year, and fully ripe, as seed should always be, and also well preserved, put through the fanning mill two or three times, and then washed in hot water with fresh lime thrown in; clean and new ashes will do well also as a substitute. This washing must not be forgotten, for this good reason also, that all the shrunk and shrivelled grains, and even any foreign grains, will float on the surface, and hence be skimmed off. This will remove the dust of smut and rust, &c., &c., and prevents their propagation. Next process, roll well the seed in flour of gypsum till dry.

The time, mode, and quantity ought next to arrest our attention. Early sowing, either for spring or fall, seems the best practice, but this depends on circumstances. The hand is the best machine yet discovered; but some approved machines have been used with much satisfaction and saving, hence again no opinion is of much use. Rich lands require less seed than poor, but experience has found that if attention be paid to early sowing, less seed will do better than a much larger quantity sown later. Two to four bushels per acre are used, and with various results, as the soil,

exposure, or other causes may explain. Well, now a word or two on after-culture, which is labour not thrown away. We suppose seed broad cast, hence light harrowing and rolling is good practice, as grass may be sown in spring on winter wheats; the harrow and roller are used to loosen the soil and cover the seeds; even this to the wheat alone on many lands is of great benefit.

Again, rolling on dry and open soils in spring, ought never to be omitted, the frosts leaving the roots of the wheat loose and exposed to every kind of injury, besides the roller is better than the harrow in pulverizing the clods, and in bedding the ground for the snath in harvest next.

Reaping.—Wheat should always be reaped ere ripe, as a greater loss is generally sustained by being too ripe, than is commonly suspected.

Peas.—The pea is a native of Southern Europe, but is also found growing spontaneously west in our own Continent. There are many kinds, but the field pea is what we have legitimately to do with. Of these there are two varieties, the *Green* and *Grey*. Both are prolific, wholesome, nutritive, and agreeable food for man, and highly recommended for cattle; also green or dry, sheep, cows and horses are very fond of them, and hogs are more economically and promptly fattened on them, and also when mixed with barley meal in a state of acetous fermentation, than almost any other kind of food. Following turnips, the labour for peas is not much, two ploughings will do, and sow at once without loss of time, but not too deep. Two methods are practised in sowing, row and broad casting. By the former, the seed is economised and the product increased, affording better tillage for the soil. The latter saves much time and labour. Experience adds, to assist the feeble pea, sow beans, oats and rye, and it is said much advantage occurs from this. Such a crop can be turned to many useful purposes on a good farm.

Indian Corn.—It is a native of our southern Continent, its prolific and other good qualities are well known, and have brought it into general use, for it is now cultivated wherever this is permitted by the climate; even in England, Cobbett introduced it, and sold the cobs for seed at 7½d. cy. each. Many attempts were made to grow, but not generally with much success, the climate being too cold for it. With proper care and attention, it does well in a great variety of soils, but prefers old and rich grounds, artificial meadows, warm loams, and moist vegetable mould. There are numerous varieties, but the White and Yellow are generally preferred, and of eight and twelve rows. It should not be cultivated oftener than once in six years on the same land. The seed selected from the best ears of the last year's crop, and from the stems on which the largest number were found. Care also should be taken to steep it in a strong solution of nitre, at least twenty-four hours before planting. Hills at least eighteen inches apart is general in planting this, but if the soil is strong, twenty-four to thirty inches is better. But ere you plant, let the weather be genial, else you may lose your labour and seed; and observe, if late, you may be too late for a crop. No crop requires more nursing, but none repays better the care. Weed, hoe,

harrow, be liberal with Plaster of Paris; should you have moist and warm weather, your crops will be excellent.

[To be continued.]

DRAINING LAND.

Of so much importance is this means of agricultural improvement considered in England, that, in addition to the immense sums annually expended by private individuals, the government, in 1846, authorised a loan of three millions sterling, that is two millions for England and Scotland, and one million for Ireland. In less than a year, applications for English estates were made to the amount of £508,659; and for lands in Scotland to the amount of £2,188,331. Among the applicants are the names of some of the largest landowners. Ireland, we presume, has not been in a condition to avail herself of the proffered aid, to any large extent.

POULTRY.

THE OSTRICH FOWL.

We copy the following remarks from that excellent work, recently published by C. N. Bement, Esq., "The American Poulterer's Companion;" a book that should be in the hands of every farmer. We are indebted to the politeness of the proprietor of the *Genesee Farmer* for the cuts, which are also copied from that work. We shall occasionally present our readers with further extracts from this book, feeling satisfied that information on this subject will add to the variety, interest and usefulness of our publication.

Among the many varieties of the domestic fowl, described by Mr. Bement, the "Ostrich Fowl" would seem to be as valuable as any for all purposes.



This valuable variety, we have understood, first originated in Bucks County, Penn., hence they are called by some the "Bucks County breed." Some of this breed were first introduced into this vicinity

some six or seven years since, from Philadelphia, by the late F. Bloodgood, Esq.

The specimens from which our portraits were taken, were presented to the author by a gentleman of Boston, who informed us he procured them from Maryland, where they were called the "Ostrich Fowl." In a letter accompanying the fowls he says, "This breed are the largest of fowls, and from them you will obtain the largest sized eggs. I have had eggs from this breed weighing 4½ ounces avoirdupois weight. I could have sold fifty pair if I had them to spare."

The colour of the cock is a dark blue-black, with the ends of his feathers tipped with white; wings tinged with a bright yellow, or gold color; hackles dark glossy blue; rose or double comb, and wattles large; bold lively carriage and a stately walk.

The hen does not differ much from the cock in colour, and is very similar in form, being deep, short, plump, and thick-set in body; legs short, of a dark color and of medium size; she has a high, single, serrated comb, generally falling over on one side; wattles large.

This breed has one peculiar quality which we have discovered. When first feathered they are very dark colored; the white tips of the feathers are very small, and on moulting the white increases, and continues to increase with every successive moult until the white predominates. They are esteemed good layers, and for a large breed, good sitters and good mothers; the eggs large and nutritious; the flesh, unlike the Malay, white, firm, tender, and fine flavoured. We consider them in all respects fully equal to the famous Dorking breed.

We are under particular obligations to Dr. R. Kitridge of Portsmouth, N. H., for the following information regarding the Booby Fowl, which, from his description, appears to be the Ostrich Fowl, under a different name. "Booby is a large fowl," says the Doctor, "weighing from 6 to 9 pounds. Of those that I received, the smallest weighed 6 pounds, the largest 7½ pounds; the cock almost 9 pounds. Their invariable color is a black ground with white spots all over them; the legs are black; they are shaped like a turkey.

They are great layers, and are not so much inclined to sit as the common hen; laying forty or fifty eggs before they are broody. I procured mine from Montgomery County, Pa."

In a letter from the gentleman in Philadelphia, who procured these fowls for the doctor, he says, "I shall send two lots of fowls, a cock and three hens each. The Boobies are speckled, and were furnished by a German, and are no doubt a year old. There will be one hen with the three, that the good honest man said was much superior, and for which he was offered two dollars, on his way to the city. He had no name for this fowl, but said 'these are the greatest fowls ever in our part of the country.'"

The Portsmouth Journal gives an account of two varieties of hens, of more than three times the common size, and of proportionate value, which can be as easily raised as the common hen. "They have been raised by Dr. Kitridge of that town." The editor says, "The kind called 'Boobies,' are spec-

kled. The cock now weighs ten pounds, and some of the hens eight pounds. They are prolific layers; some of their eggs weigh over 3½ ounces each, and measure three inches in circumference."—*Am. Farmer.*

The editor of the Yankee Farmer says: "We have received from our friend Dr. Kitridge of Portsmouth, N. H., six Booby hen's eggs. These hens are considered as the greatest of layers by those who have kept them: and it appears that those which Dr. Kitridge has have laid well after getting over the effects of travelling. Owing to their being moved, they did not lay much for fifteen days; then they (four in number) laid thirty six eggs in ten days, and none showed a disposition to sit excepting one, which he thought was not of the Booby breed."

ON THE BREEDING OF CATTLE.—Up to the time of Collins and Bakewell, cattle and sheep were produced according to the generosity of the land on which their lot happened to be cast. Perhaps we owe it to difficulties of internal communication that very distinct races maintained in some districts of small extent, as compared to the surface of Great Britain, a separate existence. Over the rest of the country some little attention was paid to the qualification of the ox as a beast of draught, but beyond this the cow was merely a milk and calf producing animal. The bull was selected for his proximity, and his best recommendation was that he had given sufficient evidence of the talent which Mr. Shandy desiderated in Obadiah's grave pet. "Their bull gendereth and faileth not." When he had served the parish in this capacity for three or four years, he was discarded from a prevalent and probably well-founded idea that uncanonical connexions were, on more than one account, inexpedient. He was then marched off to Stilton or Porchester Castle to feed French prisoners, or, if his size and substance were favourable, he was degraded into an ox, and took his place in the team. Of his progeny, the males, with the exception of a successor or two in his own vocation and a few oxen for the plough, were made into very immature veal. The females were reared. Such as were seasonably prolific, and as showed milking qualities, succeeded their mothers in the dairy, and the remainder, after having been indulged with the best pasture which the district afforded, served to relieve, with the tenderness of youth, the uniformity of old cow beef which formed the staple supply of the provinces.

Of the pure races we must speak more definitely. England preserved the Devons and the Herefords. We add, with some hesitation, the appropriately named Long-horns, which still struggle for a separate existence in a small district round the point where the counties of Warwick, Derby, Stafford and Leicester approach each other. To fix on a known point, we should say they hail from Atherstone. Some splendid horns from this race are preserved by Lord Bagot at Blithfield. As late as the year in which the General Agricultural Meeting was held at Derby, a bull of this sort obtained a prize. The earliest, and that very recent, representative of the Short-horn, of which we have knowledge, was a large, uncouth, patch-coloured animal from the district of Holderness—a milk-seller's cow. Wales furnished a mean, black, mountain bullock, dignified with the name of a runt, which still appears in considerable numbers in the markets of the western and southern grazing districts. Perhaps the improvement which has of late years been made in this race by the infusion of West Highland blood, can hardly be called a cross. We apprehend that both races speak Gaelic. Scotland gave

as the unquestionable West Highlander, whose headquarters are now fixed in Argyleshire and West Perth, and the somewhat more equivocal Galloway; perhaps even the rough east country stot, from Aberdeenshire and its associate counties, may claim some *locus stundi* in this enumeration. In Ireland we trace no distinctive breed. The distinction of the Irish ox and heifer was, that they were the worst shaped and worst fleshed animals which ventured to appear in an English market. "Good things scarce: plenty of Irish," became an almost proverbial description of a cattle fair. The same system of haphazard breeding, which overran a large portion of England and Scotland, prevailed universally in Ireland. As with the human, so with the bovine race. Each endowed with a marvellous fecundity: maidens and heifers equally precocious. The same circumstances of penury, hardship and neglect which made the Irish (not "the finest," but) the most degraded peasantry who came into permanent contact with civilization, made the Irish ox the most degraded of oxen.

So stood the case a short century ago. But a great change was at hand. The early systematic improvers of our stock took the readiest, and perhaps, under the circumstances, the most scientific course. Having come to a definite and, in the main, an accurate perception of the objects which it was desirable to attain, they selected and commingled, without any regard to affinity of race, the animals which appeared likely to realise their vision. Immediate success attended their efforts. The merits of the first cross are proverbial, and even while we write, the newspapers offer us a confirmation of the proverb in the statement, that the prize ox, which this year furnished the baron of beef for the Christmas festivities at Windsor Castle, was bred by Prince Albert, was an animal of rare symmetry, quality and fatness, and was the produce of a buffalo cow by an Ayrshire bull. In sheep, Bakewell put together white-legged and black-legged, horned and polled, long-wooled and short-wooled. Nor was the case much different in cattle. The late Earl Spencer traced much of his standard short-horned blood to a Galloway cow, which is still, we believe, a luminary of the Herd-book, and which produced one or more animals of agricultural celebrity. Still the desire for something distinctive prevailed; and as every three or four years brought a fresh generation of these animals, their fleeting series enabled a successful experimentalist to establish something of uniformity within the limits of one human life. So, from most heterogeneous materials, breeds both of cattle and sheep, having respectively distinctive qualities, were called into existence. Of either sort one—of cattle, the improved short-horn, and of sheep, the new Leicester—obtained a decided pre-eminence. They gained a footing in almost every agricultural district of England and Scotland. The uncivilised herds and flocks of our predecessors shrank before them as rapidly as the red man before the white in the New World; and though fashion certainly pushed them into some districts for which they were unsuited, and in which they degenerated rapidly, yet in the main they have retained their conquests. No doubt they trenched on the dominion of the old and pure races. They drove in their outposts, and even made inroads into their territory. Meanwhile the possessors of the old races were not insensible to the spirit of improvement which was abroad, nor to the fierce competition which was forced upon them. To them, as to men in higher station, three courses were open. They might discard their own stock as unequal to the occasion, and adopt that which the enterprise of other men placed within their reach; or, following the example before their eyes, they might aspire to success by crosses of which their own herds should be the foundation; or, thirdly, they might seek improvement by judicious selection and rejection within their own do-

main. Happily, they adopted the last course, and the purity of our old races of cattle was maintained. Who would not regret the disappearance of the beautiful Devon and the picturesque West Highlander? Either position or design had kept these races pure, and they retained all the distinctive marks of purity. Thus they were improved without being adulterated, and remain to this day as marked in their respective characteristics as they were before an improved Short-horn or a new Leicester had been called into existence. Their improvement has perhaps not been so rapid as that of the new breeds, but they did not start from so low a point of degradation. Nor should it be forgotten that they occupy districts below the average of the kingdom in fertility. On the whole, they have maintained the contest for superiority with various success—a success regulated perhaps at times by fashion and caprice, but resulting on the whole in good judgment and truth.*

We should now, perhaps, be in a condition to estimate the results of a struggle which has continued for more than half a century. But before we can pronounce even a qualified opinion, we must have a very clear perception of the principles on which a decision ought to be founded. The real and only question for the farmer is, what breed of cattle will year by year yield me the largest money return per acre, or per given quantity of various sorts of food consumed by them? And this question is not settled by saying, Taken—ten tons of Short-horns and ten tons of Devons; 50 tons of food of equal quality were consumed by each lot; the short-horns give beef as 21 to 19, or *vice versa*. 1st, we must know the respective histories of each ten tons; we must have a debtor and creditor account of each up to the time of weighing in. The one may have credit for services in the dairy, the other for services in the team; or the creditor side may be blank in the case of either or both. We must *here* consider the breeder and the feeder as one man. Before we can answer the question so interesting to him, we must know the antenatal cost of each 10 tons, and their respective debits and credits up to the day when they leave the hands of the beef manufacturer for the shambles. 2ndly, We must know which fetched the most money—the beef represented by 21 or that by 19. It is easy to say, "I have bred a beast of rare symmetry, great size, early maturity, first-rate quality." Equally ready are the inquiries, "After how many failures?—At what cost?—How stands the balance?" These questions are answered by many brave and contradictory assertions, by many wild and contradictory guesses, but by no statistics on which we can found a safe conclusion. And yet on the answer depends, on average agricultural farms suited to any description of cattle, the whole question of successful breeding and feeding. The statistics are not forthcoming, first because few farmers keep any accounts but a cash-book; and secondly, because considerable intricacy arises from the circumstance that the breeder and feeder (in the case of cattle) are ordinarily not the same person. To those who give to the public accurate statistics of one farm, or of one animal, we are under great obligations; but the questions at issue can only be solved by a multitude of instances. Being therefore

* A split has arisen in the Herefords, of which we cannot explain the origin, but which we regret, though we cannot say that it has produced any deterioration. The difference, though small, is decided, and the respective parties are of course very positive. The general Hereford is an animal with a white face, upward horns, and a tawny side. The animal of the offset has a speckled face, generally a broad white stripe down his back, and shorter legs and more horizontal horns than his relative. Of the speckled-faced Herefords, the late Mr. Price, Earl Talbot, and Sir F. Lawley have been the most distinguished breeders. The contest between speckled-face and white-face is not worth carrying on.

"Facies non omnibus una
Nec diversa tamen, qualis decet esse sororum."

without the sure monition of arithmetic, and left to our own observation, aided by the opinions of men of sagacity, and finding no very definite or decided preponderance in those opinions, we are not in a condition to offer to our readers any guidance on which we could safely advise them to found their practice. But we may mention some of those characteristics of the various animals which we have under review, which must be important points of consideration, whenever increased knowledge shall enable us to bring the main question to a definite issue. Before we do so, we may be allowed to premise, in a single sentence, that in the breeding of cattle, as in every other important human pursuit, national objects are promoted by the successful skill and industry of individuals. The first vocation of a cattle breeder is to furnish his countrymen with the dairy, with all its multitudinous comforts and luxuries. We scarcely know a more important national object of its class than to place a free supply of milk within the reach of the great body of our population. The next vocation of the breeder is to supply animal food—milk and animal food in the case of cattle, wool and animal food in that of sheep. Animal food is suited both to our climate and to the hard-working energy of our people. The breeder has to cater for appetites which bodily exertion has made rather active than critical, as well as for others, of which sedentary and intellectual pursuits have blunted the desire for quantity, but at the same time stimulated the appreciation of quality. Bearing these objects in view, we proceed to remark on those qualities of the various descriptions of agricultural animals which subserve to their attainment.

From their general and hitherto progressive prevalence, the new breeds of cattle and sheep claim our first notice. We have already adverted to the manner in which (if at the expense of a little accuracy we may use the most expressive phrase) they were *created*. To the short-horns we must award the merit of uniting milking qualities with a propensity to get fat, in a degree which rarely, if ever, had been previously found in the same animal. We doubt, however, whether the mothers of the prize bullocks are the animals which fill the milk-pail. To that very simple agricultural implement is, as we fancy, to be traced the slack and bare loin which is the characteristic failing of this breed. In the shambles at Birmingham, where a large proportion of the well-fed cows from our dairying districts are slaughtered, you may generally perceive the blue and bare spot on the loin, though the rest of the carcass is loaded with fat. The advocates of the new breeds claim for them, that with a given amount of food, and in a given time, they will yield a larger weight of beef and mutton than animals of the old races. With some qualification, we are prepared to admit the claim. In the case of selected individuals, previously brought to a certain age or point of maturity, we think that the claim is well founded. Our qualification has reference to the previous history of the animals. As we hinted above, we must begin at the beginning. We have no doubt, we might almost say experience has proved, that if 1000 short-horned females were subjected to the breeding process in competition with 1000 West Highlanders, Devons or Herefords, not only in the first named would there be more failures of produce, but among the products there would be more animals of low quality, coarse and utterly exceptionable, than would be the case in any of the three old races. As little doubt have we that 1000 Leicester ewes would produce fewer lambs, and among those fewer more ricketty, wry-necked and turn-in-the-head, than 1000 ewes of any other breed. This is because, though art may improve upon nature, it never can become so unvarying and sure in its operation. The varieties and incongruities which have been introduced on account of their connexion with some coveted

quality, will from time to time re-appear. The co-coeter of a new breed is always liable to disappointment. He introduces into his herd some unknown animal on account of certain apparent excellences, but he cannot tell what qualities, though latent in the individual, run in the blood. The flat side, vulgar head, or hard flesh of some paternal or maternal ancestor may re-appear in the offspring. We have heard Mr. Buckley, of Norman-ton, the owner of one of the oldest and purest flocks of Leicestershire sheep, say that from time to time grey faces and black feet appeared among his lambs. We have before us a letter from the late Earl Spencer to a friend who had consulted him on a point in breeding, in which he says, "Your cross will not justify a very high-priced bull, but in order to secure you against *anything monstrous* in his stock, you must ascertain that you have several generations of real good blood." With such incidents a breeder of horses is familiar. He selects a bay mare with black legs, and unites her with a male having the same characteristics. If the produce should be chestnut, with a bald face and what the dealers call white stockings, we can assure him of sympathy from many fellow sufferers. To disappointments of this class, the proprietors of original or very old races are less liable. Every connoisseur in cattle is aware, that in a drove of short-horned bullocks or heifers, there be more diversity of shape, of quality, of colour and of aspect, than in a corresponding drove of West Highlanders, Devons or Herefords. Another difficulty besets the breeders of short-horns, and all others who have attained to animals of great merit by many mixings and crossings. You have selected the breeding stock for size, symmetry, propensity to fatten, or for what a Frenchman would call a "*je ne sais quoi*," and a breeder a spunky appearance. When you have secured the recurrence of these qualities in their offspring, as far as bovine frailty permits, you have invariably attained this object at some sacrifice of fertility. We have known some breeders of short-horns who have been, and perhaps still may be, desirous of having bulls with the heads of heifers and the thighs of bullocks. The offspring of such males is always deficient in quality, and is of weak constitution; the progeny inherits the paternal effeminacy. When such a blunder has established itself in a herd, it can only be redeemed by recurrence to a male.

"cui turpe caput, cui plurima cervix.
Et crurum tenuis a mento palæria pendent."

These are the true and natural indications of taurility.

Our lamented friend, Mr. Edge, of Strelley, having shaped in his imagination a breed of cattle formed on his own model, great size, symmetry, and a propensity to fatten, spared no expense to realise his vision. Aided by a most correct eye, and with no prejudices personal or local, he selected at any cost, and from any quarter in which he found them, the animals, both male and female, which he thought likely to answer his expectations. Nor was he disappointed in the qualities of their offspring. But after some years, when he seemed to have attained, or to be on the point of perfection, he came to a dead lock; his females, though much solicited, refused to give him produce. On this ground, and on this only we believe, he broke up his herd and discontinued the pursuit. Lord Spencer, an enthusiastic advocate of short-horns, admitted in more than one public speech, that in his herd fecundity had diminished to an inconvenient degree, and was only maintained by a degree of care and attention which could hardly be extended to the general breeding stock of a kingdom. We know the ready answer—The females are too fat. But this is not the whole question. We lately inspected a herd of Herefords, the property of a distinguished and (we speak on the authority of his farming accounts) very successful agriculturist. The breeding cows and

heifers, living solely on crushed gorse, were considerably above the point of marketable beef in fatness. We have no doubt they would be very bad milkers. The bulls were loaded with fat; but there was no deficiency of calves; the drafts on account of barrenness were very few. The expression of the owner was, "I have no trouble on that score." Twins were by no means unknown in the herd. Since short-horns have been very generally introduced into the midland counties, barrenness has been a great "trouble" to the cheese-making farmer.

We will endeavour to sum up impartially. Even the improved short-horn is by nature a coarse animal, requiring a good climate and a generous soil, and unprofitable for *merely* feeding purposes. Sterility is a serious tax on any herd which, by great care and attention, has attained to a respectable quality of flesh and to symmetry of form. The dairy sustains the short-horns. The cast cows soon acquire a rough coating of fat, and form a valuable supply of low-priced beef for the manufacturing and colliery districts—for those appetites which we have described as being active without being critical. But we should be unjust if we did not assign to the short-horns one quality of great value in an agricultural animal. Composure of mind. The males have lost the combativeness of their species. We can hardly conceive a more ludicrous sight than a bull from Althorp or Babworth thrust into the arena at Seville or Ronda. The females yield precedence without contest. If you introduce a little petulant Highland cow into a dairy of short-horns, of which every individual is double her own weight, she at once becomes mistress and leader of the herd. We have been in the habit of attending annually a sale of fat cattle where the stalls are filled with beasts of various descriptions. The short-horn is released from the stake to which he has been tied for four months, and proceeds to the hammer with all the solemnity which befits an animal who is walking to his own funeral. The West Highlander, as soon as he ascertains that he is free, rather in frolic than in fury breaks through the ring of his intending purchasers, blunders over a fence, and celebrates his recovered liberty by most extraordinary antics. The butchers get but a passing view of him. "Now, gentlemen," says the facetious auctioneer, "you must shoot him flying." His sale proceeds without the solemn pinching and punching, and the wise looks which, in the case of a more patient animal, are preliminary to a bid. Some excitement has been produced by the scene, and, if the gin-bottle has done its duty, he generally sells well. But we beg pardon.—We must not altogether pass by the important point of early maturity. Here the short-horns claim a decided pre-eminence. We will not altogether negative the claim, though we do not find it borne out by the declared ages of the animals which are exhibited for prizes at the Smithfield show. We only desire to ask and to receive candid answers to two questions, and, in order that we may dismiss the subject, our questions shall have reference to new Leicester sheep as well as to short-horned cattle. Have or have not these two breeds possession of the most fertile districts which are devoted to breeding? Have they or have they not during their two first years more indulgence than falls to the lot of the young of other breeds?

So many general points have entered incidentally into this review of short-horned merits, that we can be more concise respecting the old races. We will take Devons and Herefords together as having many points in common. They are confessedly prolific; neither are suited to a farmer whose rent is to be made by the produce of his dairy; we reckon little of the services rendered by their bullocks in the team; human labour must be at a low ebb where it can be profitably associated with so slow a

beast as an ox; bullock-teams and railways will not, we think, long co-exist. We must admit that something will be sacrificed, for we are not insensible to the superior quality of meat of mature age. The claims of these two races are founded on good constitution, on the very rare occurrence of animals without merit, on a considerable capacity to bear hardship without suffering, on symmetry sustained with less care than in any artificial breed, and on the high quality of their beef. When their symmetry does fail, it is generally in the fore quarters; where the high-priced beef lies, they seldom fail. They are unrivalled in the deep cut of lean meat well covered with fat along their whole top and sides, which butchers find so acceptable to their best customers. If compelled to give a decision between the two races we should say, with much hesitation, "If you wish to please your eye, take the Devons; if your pocket, the Herefords."—*Stephens' Book of the Farm.*

THE CANADIAN AGRICULTURIST—CORRESPONDENTS' LETTERS—FARMERS NOT INCLINED TO READ ON AGRICULTURE—CONCLUSION.

To the Editors of the *Agriculturist*.

GENTLEMEN,—I have looked over carefully the half dozen numbers of your journal, with which I have been obligingly favoured by Mr. Buckland, and take sincere pleasure in recording my humble opinion that it is calculated to contribute materially to the progress of agriculture in this province. One feature has been wanting in all our Canadian publications, that of short and well-written articles, over the signatures of the writers, from different sections of the country. Knowing that you were desirous of enlisting correspondents for your journal, I examined each successive number, with a view of ascertaining how far you had been successful, and find that your correspondents' letters are not by any means so numerous as is desirable. I regret this, because I look upon these letters as the very best instruments in arresting the attention of farmers and others. One great difficulty appears to be to get agricultural articles read. Canada has long been embroiled in political contests, and the yeomanry have had much more of their attention turned to political than to scientific subjects, and as a consequence they have corresponding tastes. The true friends of agriculture therefore find it difficult to secure sufficient attention to agricultural and scientific investigations, on the part of those who are more immediately interested in them. Political journals are read with avidity, while agricultural papers are frequently with reluctance taken out of the post office.

Within my own experience, active and intelligent members of agricultural societies have exerted themselves fruitlessly, with a view of extending information on farming operations, by the circulation of periodicals. Strange to say, in some instances, farmers of considerable intelligence, and who by honest industry have managed to acquire a reasonable competency, affect to despise this means of improvement! It is now some years since the first regular agricultural paper made its appearance in Canada. We have now at least three of respectable character and appearance; some token, I am happy to say, of a

change for the better in the tastes and opinions of the farming population.

Still very much remains to be accomplished in the way of creating an interest in the great cause of our country. Agricultural societies, our provincial association, our agricultural journals, are yet, comparatively speaking, struggling for existence! However, while the intelligent and the enterprising, the lovers of their race, and the well wishers of Canada, are redoubling their exertions, progress is made, slow at present, but sure and lasting in its results. You are, gentlemen, engaged in a noble cause; and I trust most sincerely that your success may in every respect be more than commensurate with the highest expectations of one who has resolved to devote his "talents in promoting peace and good will, in the diffusion of useful knowledge, the improvement of agriculture, the advancement of the social and moral condition of the people, and of those principles of our common christianity which all good men both believe and practice."

I intended to make a few other observations, but feel that it would be trespassing on your space.

W. O. BUELL.

Perth, Bathurst District,
July 9, 1849.

SHALL WE MAKE COMPOSTS?—In the *Cultivator* for January, 1849, I read a notice of a work entitled "*Scientific Agriculture*," &c., by Dr. M. M. Rodgers. I have since procured the book, and in glancing over its pages, I came to the following, under the head of "*Compost*."

"It was formerly supposed, that great advantage was derived from the combination of several different substances together, and forming what are called *composts*. The recipes for these compounds are numerous, and go to prove that the discovery of a good compost requires but little scientific or practical skill. When a compost heap is made up of several materials, which are all separately good manures, it follows of necessity that the resulting compound must be a good fertilizer. But it is impossible to supply any more in this way, than if these several ingredients were applied to the soil separately. And a little knowledge of chemistry will shew that by this means no new elements can be generated. Neither can any new property be developed which could not be done by their separate action. We see that whenever a substance which has little or no fertilizing power, is in this way manufactured into good manure, it is done at the expense of some powerful fertilizer which is distributed by the mixture, and consequently, loses just as much of its efficacy as the other gains. Thus, although this process serves to dilute and extend manures which are too powerful or too expensive, it absolutely supplies none."

The author goes on still further to explain, that the principal advantages of composts, are the dilution of manures which are too strong when used by themselves. Thus, among other substances, he mentions "caustic lime," the object in using which, he thinks can be much better attained by mixing, and diffusing it through some other substance, "such as saw-dust, sand, *barn manure*," &c.

Now the inference from the above remarks is, that ordinary composts are unprofitable—that no effect is produced that would not take place if the substances were applied separately, and that, consequently, the labour of forming the compound is lost.

It strikes me that Dr. R.'s reasoning is not entirely

sound, and that his conclusions are not wholly reconcilable with facts. It is not strictly true that the same effect is always produced by the use of substances applied separately, that would follow from their combination. For instance, peat, in its natural state, frequently contains an acid which is prejudicial to vegetation, and its fertilizing properties are locked up, as it were, until they are liberated by the action of some substance which causes a decomposition. Hence, it has been found highly useful to mix with peat alkalis of some kind, by which the acid is destroyed, and the peat brought into a soluble condition. Potash and ashes are used for this purpose; the ammonia of animal manure, urine, and all animal matters, produce a similar effect. Thus, Doctor Dana, in his *Muck Manual*, states that—"the power of alkaline action is alone wanting, to make peat good cow dung," and that—"by the addition of alkali to peat, it is put into the same state which ammonia gives to dung."

Here, then, is one example of the advantage of combining or mixing substances to be used as manure. But it may be asked—"Why will not the same effect be produced, if the peat and the alkalis are both spread, separately, on the same land?" For the obvious reason that they are not brought sufficiently, and for a proper length of time, into contact. The alkalis being spread over a larger surface, and exposed to the air and rains, are soon dissolved and carried into the soil below the peat.

But there are other advantages, in mixing different substances in a manure heap. The farmer should endeavour to save all the excrements of his animals, both solid and fluid, as well as all other substances which are capable of enriching his land. The readiest way of saving urine, is to retain it by means of some absorbent—such as charcoal dust, peat, loam, straw or other vegetable rubbish.

Again, if it were true that substances ultimately produced the same effect when applied to the soil by themselves, as when combined, there is still, in many cases, a convenience in composting. It is inconvenient to use corn-stalks and other litter in their crude state. If applied to the surface, they do not readily rot, and they interfere with cultivation by obstructing the operation of the implements used. If buried beneath the surface,—which is not always readily effected,—they sometimes cause the soil to be dry and *huffy*. There is no way that these matters can be used to so good advantage as by mixing them with animal manure, and saturating them with urine. By this means, the ammonia soon brings on a decomposition, by which the fibrous structure is cut down and they are brought into a comminuted state, fit to be used as circumstances require. But we may cite other authority in favor of composts. J. Prideaux, an agricultural chemist of considerable distinction, advises to mix in the manure heap—"peat, sods, turf-parings, ditch and pond scourings, way-soil, humus soil in whatever form, and ashes of all kinds. All *liquids* in which vegetable or animal matters have been soaked or boiled; and all that contain fertilizing materials, as soap-suds, dish-washings, pot-liquor," &c. "We must remember," he adds, "that vegetable matters work sour, and that animal substances generate ammonia, which neutralizes the acid, and is fixed by it, so that in due proportion they correct each other. Urine gives most ammonia."

One word, before closing, in regard to mixing "caustic lime" with "barn manure," recommended by Dr. Rodgers, as one of the means of "diluting" the lime. This is a kind of compost that I am not in favor of. I had supposed, if any thing has been established by chemical investigation, that caustic lime should not be mixed with animal manures. Thus Prof. Johnston says, guano should not be mixed with quick lime—

"because the quick lime sets free the ammonia contained in the guano, and causes it to escape into the air." He observes, also, that "quick lime will, in the same way, drive off the ammonia contained in liquid manure, and in horse or farm-yard dung." Farmers who have bought poudrette that has been compounded with fresh lime, have often complained of its inefficiency.

T. Sedgwick, a writer in the *English Agricultural Gazette*, says—"The employment of lime with dung is a most baneful practice, as it renders the ammonia caustic and volatile, to the greatest degree, and causes the loss of the most energetic portion of the dung. When lands require lime, it should be applied separately, and avoid as much as possible its contact with the dung."

The effect of mixing lime with animal manure, may be explained as follows:—Lime-stone contains nearly half its weight of carbonic acid. In the process of burning, the carbonic acid is driven off; but the lime has a constant tendency to return to its original condition by the re-absorption of the property it had lost. Animal manure contains ammonia, combined with carbonic acid. When fresh lime is added, it attracts the carbonic acid, which, uniting with the lime, sets the ammonia free, and it escapes.—*Albany Cultivator*.

A MIXTURE OF GRASSES.—Our farmers are now laying down much of their ground to grasses. Clover and herds-grass are, nine times in ten, the kinds and the only kinds sown, whether for mowing or pasturage. We have ever contended against this mode of being confined to only these two species of grass, and have always advocated mixing together more varieties. It ought to be done in either case, whether you wish to confine your land to mowing for the hay only, or where you wish to turn it out to pasture. Each separate species of grass or plant, used for forage, has some peculiar property or ingredient which is valuable in producing certain qualities in the beef, milk, butter, or cheese, which is manufactured from it. The white clover, for instance, is said to produce more *caseine*, or cheesy matter, in the milk of those cows that feed upon it than most other grasses. Some grasses give peculiar flavour to the butter, and others give out a pleasant fragrance to the hay, which is communicated more or less to the milk. The red-top and the orchard grass should be mingled in with herds-grass and red and white clover. There is another grass which is not very abundant with us, which should be more cultivated as an ingredient of our pastures and mowing fields. It is called the *sweet scented vernal grass*. It is what botanists call the *Anthoxanthum Odoratum*. It is a native of Europe and was introduced into this country, and has become more or less scattered about our grasses. It is very fragrant, and when a little of it is cut, gives a delightful flavour to the new mown hay. It is an early grass. A writer some years since in the Farmer's Cabinet, speaking of the prevalence of this grass about Philadelphia, says, its scent somewhat resembles vanilla. It grows from a foot to eighteen inches high. Its stem is very small and round, with a few long and slender leaves. Its odor, said he, is sufficient to distinguish it from other grasses found in our pastures. When in blossom the air is often highly charged with its scent. As we have before said, it is an early grass, and of course ripens before other grasses, so that it will require but a small portion to be sown for the earlier supply of pasturage, while others will come on in succession. It accommodates itself very well to different soils.

It is found that butter made from cows which graze upon pastures in which this grass grows, has in the earlier part of the season a peculiarly pleasant flavour, and when this grass declines, the flavour declines. The grass, however, comes on again in the fall, and it makes

valuable fall feed, or "aftermarth," as it is sometimes called.

A chemical examination of this species shows that it is not so highly nutritious as some of the other species. Its fragrant properties consist in its containing *benzoic acid*, a substance which is well known to possess a peculiarly aromatic odor. It is stated that an essential oil can be distilled from the grass, which will afford a pleasant perfume.

It is not strange, therefore, that the butter should contain a portion of it, and partake of its fragrant qualities. We know that milk will contain the odoriferous particles derived from turnips, onions, garlic, &c., &c. Hence it is an object with the farmer to take advantage of the knowledge of such facts, and mix his grasses in such a way that he shall not only obtain a supply of the nutritious matter which the several species may contain, but also any other materials which will render the products of beef, butter, and cheese, more grateful in quality, and consequently more saleable and profitable. This can be easily done by mixing the seeds of different grasses, when sowing. We presume all the varieties of seed required for the above purposes may be obtained at the several seed stores in Boston, New York, and other large places.—*Farmer*.

VERY IMPORTANT TO FARMERS.—Turnips may be liberally fed to milch cows without imparting any unpleasant flavor to the milk or butter, by the following process:—Place the whole turnips into a steam box, with chopped hay, straw, or corn fodder, and steam them until they are soft. There should be some apertures in the top of the box, in order that the steam may escape whilst they are cooking. As soon as they are soft, the "escapes" should be closed, and the steaming process continued until the material with which they are steamed is perfectly saturated with water and the flavour of the turnips.

By this process, all the strong, unpleasant flavour of turnip is removed, and a palatable one imparted. In connexion with this experiment, I made the following invaluable one in testing the comparative value of cold and warm food, and drink for milch cows. The experiment was conducted thus: a herd of nine cows in a stable were fed with food, prepared as above, and allowed to cool before it was fed. The cows were turned out into the yard to drink cold water, where they remained some two or three hours, morning and evening, in the cold air (the weather being very cold.) The food was given in the stables, and the cows remained in all night. The milk was carefully measured for one week, and the amount of feed given, noted. The succeeding week the same amount of feed, prepared in the same manner, was given warm, the stable temperature was kept above freezing, and the chill taken off the water, the cows being constantly kept in the stables and the water carried to them. The result was, that there was an average gain, or increase, in the amount of milk secreted, of about one pint per diem for each cow, or nine pints, at five cents per quart, or two and a half cents per day. This will leave a net profit, in favour of the warm stable, food and drink, of about thirteen cents per day of the nine cows, or about \$4 per month, which is the usual wages paid a common labourer in winter, in this region.

Besides the above advantage, the cows were much more comfortable, and the labour of turning them out into the yard and putting them up again, was more than that of carrying the water to them, as they required but little, being fed with moist steamed food, about one third of which was turnips.

I have also fed my swine with warm swill during the past winter, in which I have found a decided advantage.—*American Agriculturist*.

USE OF BUCKWHEAT AS GREEN FOOD FOR ANIMALS.—Buckwheat, when intended for green fodder, ought, as already hinted, to be sown in the first week in June, in order that it may be available at the most parched and needy time in summer. It may also, for a succession, be sown in three crops each a fortnight later than the preceding; and, in this case, it will of course be available throughout a corresponding series of mowings. When cut for fodder, it is most suitable when about half in blossom; and the quantity of it wanted for each day ought to be mown on the preceding day, at a time when it is perfectly dry; for as cows eat it with the same avidity as clover, and are liable to become bloaty if they have access to it in a thoroughly green state, it is best adapted for them when it is quite dry and has become a little withered. All domestic animals, particularly cows, weanling calves, pigs, and mares with foal, are exceedingly fond of this fodder, and appear to thrive well upon its use. "The most economical management of it," says Dr. Hunter, "is to put it into moveable racks, because if laid in heaps upon the ground, the cattle will be apt to fight about it, and spoil a great deal by trampling. What falls from the racks, the pigs will take care of. In this manner, the cows will fill themselves in the forenoon with the greatest ease, and ought then to be brought home to the fold-yard, where they will lie down and enjoy rest during the heat of the day; instead of which, if they were in the pastures in search of food (which at that time of the year is often very scanty,) they would be teased with flies and other insects, be running about and heating themselves, and instead of increasing their milk, would shrink from it more and more. Whoever will make the experiment, will certainly be most agreeably surprised by the great quantity of excellent rich milk his cows will produce, at a time when all his neighbours, who have not been so provident, will complain of the considerable reduction of theirs."

ENGLISH FARMERS.—The progressive movement impressed on society has penetrated the agricultural as well as the manufacturing districts; and if the improvements in rural industry are less remarkable than those effected by the application of the power loom, the inferiority may fairly be attributed to the nature of the work, which does not, to an equal extent, admit of the use of mechanical forces. However, within the last half century vast tracts of land have been reclaimed; fens and marshes have been drained, and sandy soils brought into a high state of culture; the farmer has studied chemistry, and perfected himself in the knowledge of manures. An extraordinary change has also taken place in the social habits of rural life; the houses of the farmers are now elegantly furnished, and their general style of living has become generous and refined. Their children are well educated, and their wives and daughters have caught the spirit of metropolitan taste. They have, indeed, been reproached with having abandoned the simplicity of their ancestors, and aspired above their station; but it is difficult to understand why agriculturists should not make equal advances with manufacturers, merchants, and tradesmen. Undoubtedly they err if their expenditure exceeds their means, but this of course applies to all classes, and it seems as admissible that the farmer should keep a house in London, as that the Manchester manufacturer should possess his cottage ornee on the banks of the Windermere. It is said of the late Earl of Yarborough that he was pleased at seeing his Lincolnshire tenants mounted on better hunters than himself, as an evidence not only of laudable pride, but of independent resources. It is also obvious that, in proportion to their riches, the farmers become good customers to the shop-keepers, who, in turn, are enabled to stimu-

late the industry of towns, and by such means the home trade flourishes. If we wish to estimate the evils of an impoverished tenantry, we have only to look to Ireland.

REARING AND FEEDING STOCK.—The following is a summary of remarks made by Mr. Lyon, in a lecture before the *Derby Farmers' Club*. The principles laid down are worthy of attention:

Young animals grow more quickly for a given amount of food than older. By high feeding, a lamb of Southdown breed (not a large sort) may be fifteen or sixteen pounds a quarter at a year old; at the same age, a young ox may be from five to six score a quarter. This produce, from the smaller quantity of food which animals consume while young, is equal to what they will yield in any subsequent year, from a larger quantity.

If young animals be reared well, or kept fat from the beginning, they acquire a constitution which ensures their growing more in subsequent years from a less proportion of food. The progeny of well-reared stock improves from generation to generation.

When an animal is in good condition, it yields a greater produce for its food, than when it is poor and lean.

If, therefore, an animal be first fed on good pasture till it is fresh and fat, and then removed to poor keep, so as to lose its condition, not only is the food wholly lost on which it declined in flesh, but all the good food which it may consume for some time afterwards has very much less effect.

The feeding of animals should therefore be quite continuous, as well as liberal, in order to be fully profitable.

All animals pay best for that amount and kind of food which causes them to produce most largely. That which makes rearing stock grow and thrive fastest, that which makes feeding beast or sheep fatten most quickly, and that which makes milking beasts milk most profusely, and for the longest time, is the most profitable kind of food.

The principle of continuous feeding is especially applicable to milking cattle. For if the milk be suffered to fall off, it cannot be brought fully to return, like the fattening propensity; and if, during the interval between the cessation of the milk and calving, the state of constitution which promotes the flow of milk decline, it requires a long period to bring out the full effect of the liberal food given afterwards, and the cow never yields so largely as she otherwise would have done.

It is always profitable to grow on land a succession of nutritious food for all stock kept on it. But in those cases where the natural produce of the land is deficient in richness, or where much straw, in proportion to other forage is grown, or where the casualties of season cause crops of cattle-food to be deficient, it is always advantageous to add a portion of artificial strong food, such as cake, or corn, or linseed, to the food of animals, whether rearing, feeding, or milking stock.

A MAMMOTH CHEESE.—Mr. Jas. Elgar, cheesemonger, Peterborough, England, has exhibited an immense cheese, weighing 1474 lbs., its circumference 13 feet, and thickness 18 inches. This exceeds in size and weight the one sent as a present to the Queen, from Somersetshire, in 1841, which measured nine feet round, and was 22 inches deep. Mr. Elgar's cheese was made from upwards of 20 hogsheads of milk, of one meal from 737 cows.

Horticulture.

HORTICULTURAL SOCIETY.

The Midsummer Exhibition of this society was held in the Normal School Grounds, on Wednesday, the 18th of July. The day was warm and fine; the inspiring band of the Rifle Brigade was present; a very considerable quantity of fruits, flowers and vegetables, were tastefully arranged in the two tents erected for the purpose; and yet, strange to say, the attendance was most meagre. We can scarcely account for this paucity of visitors, except by supposing that the inhabitants of Toronto are so afraid of the much dreaded cholera, that they think twice about *looking* at vegetables, having been so fully warned not to *eat* them. We cannot imagine that it was owing to a want of taste for horticultural pursuits, for the attendance on the first exhibition was very considerable, although the weather was far from favorable. Whatever may have been the cause which kept visitors away, it is much to be regretted, as the fees for admission must always form a large proportion of the income of the society, which has to be applied to the payment of the various prizes. We know that on the present occasion prizes were not allotted to several articles which in reality deserved them, owing to the absolute necessity existing for the Judges keeping within bounds; and the society can only hope to succeed and to become useful in promoting emulation among all connected with gardening, by offering a large number of prizes for competition. We hope that our fellow citizens will assist in so laudable an undertaking, either by becoming members or by not failing to visit the ensuing exhibition.

The number of articles exhibited was not altogether so great as might have been expected, several of our most successful gardeners having (we know not from what causes) neglected to send any specimens. We did not observe any thing from Messrs. Turner, Gordon, or Mansfield, whose names we have heretofore generally found on the prize list. The peculiar nature of the season may perhaps also account for some articles not being sent in as great perfection as could be wished, such for instance as cauliflower and brocoli, although a very respectable specimen of the latter was exhibited by Mr. Cull.

Among the flowers, we noticed a very fine grown specimen of the splendid cactus speciosissimus, from Mr. Justice Draper's conservatory, and a well grown *stoa carnosus* from Mr. Hancock's.

A fine specimen of *crassula coccinea* was exhibited by Mr. Fleming, among his twelve greenhouse plants; while his collection of fuchsias was exceedingly fine, both on account of the size of the blossom and the growth of the plants; although it only received a second prize, on account (we believe) of Mr. Hancock's collection containing a greater variety of kinds.

A fine collection of hardy roses was shown by Mr. Leslie, although the season was too advanced to have these flowers in perfection; while the coxcombs were not arrived at their full growth, and were consequently not good.

Three floral ornaments were exhibited by Mr. Hancock, Mr. Fleming, and Mr. Leslie, the first distinguished by the beauty and variety of the flowers, the second by the elegance of the design, and the third by the richness in garden flowers. The judges very properly, we think, did not classify them, but allotted a prize to each, being all excellent.

The display of fruits was very good; the gooseberries, from Mr. E. Turner, were magnificent; the grapes, from Mrs. Bull, very early and well ripened; red raspberries, from Mr. Humphreys and Mr. Fleming, sufficiently luscious to make one's mouth water; while the display of white, black and red currants, was so great that the judges must have had very considerable difficulty in determining which was the best. Well ripened melons were exhibited by Mr. Margetson.

Among the vegetables, we may especially allude to Mr. Lewis' potatoes, Mr. Sherwood's and Mr. Collier's cabbages, Mr. Margetson's rhubarb, as well as the seedlings from Mr. Leslie, and carrots, parsnips, beets, onions, &c., &c., from a number of gardeners.

The vegetable department was on the whole the most creditable; so many excellent specimens were exhibited that our space will not allow us to particularize them all, and we refer our readers to the accompanying list of the successful competitors.

It is to be hoped that the next exhibition will surpass the two former, and that every gardener or amateur who has any thing that he thinks worthy of exhibition will not be backward in sending it to the autumn show. We understand that the next meeting will be held shortly after the Provincial Show, and consequently very early in October or late in September.

The following is the list of prizes:

Exotic in flower, 1st prize, Mr. Hennah for	
Mr. Hancock	£0 7 6
Do. 2nd prize, Mr. Sherwood	0 5 0

12 Greenhouse plants, prize, Mr. Fleming	0	7	6
Balsams, prize, Mr. Fleming	0	5	0
Do. second best, Mr. Burns	0	5	0
Fuchsias, 1st prize, Mr. Hennah	0	5	0
Do. 2nd prize, Mr. Fleming	0	5	0
Hardy Roses, prize, Mr. Leslie	0	5	0
Cut Flowers, prize, Mr. Leslie	0	5	0
Do. second best, Mr. Hennah	0	5	0
Bouquet, prize, Mr. Fleming	0	5	0
Floral Ornaments, prizes, Mr. Fleming, Mr. Hennah, Mr. Leslie, each	0	7	6
Potatoes, kidneys, 1st prize, Mr. Lewis	0	5	0
Do. Early Junes, 2nd do. Mr. Paling	0	5	0
Kidney Beans, prize, Mr. Hayden	0	5	0
Do. second best, Mr. Tattle	0	5	0
Peas, prize, Mr. Tattle	0	5	0
Do. second best, Mr. Paling	0	5	0
Red Raspberries, 1st prize, Mr. Humphreys	0	5	0
Do. 2nd prize, Mr. Fleming	0	5	0
White Raspberries, best exhibited, Mr. Tattle	0	5	0
White Currants, prize, Mr. Lewis	0	5	0
Do. second best, Mr. Paling	0	5	0
Black Currants, prize, Mr. Tattle	0	5	0
Gooseberries, prize, Mr. E. Turner	0	5	0
Do. second best, Mr. E. Baldwin	0	5	0
Cherries, prizes, Mr. Tattle, Mr. Leslie, each	0	5	0
Cabbage, prize, Mr. Sherwood	0	5	0
Do. second best, Mr. Collier	0	5	0
Brocoli, best exhibited, Mr. Cull	0	5	0
Cucumbers, prize, Mr. Lewis	0	5	0
Melons, prize, Mr. Margetson	0	5	0
Rhubarb, prize, Mr. Margetson	0	5	0
Do. second best, Mr. Burns	0	5	0
Celery, prize, Mr. Lewis	0	5	0
Cauliflower, prize, Mr. Daniells	0	5	0
Carrots, prize, Mr. Margetson	0	5	0

Extra Prizes of 5s.

Snap Dragons	Mr. Fleming.
Hollyhocks	Mr. E. Turner.
Dahlias	Mr. Fleming.
Box of Vegetables	Mr. Hayden and Mr. Margetson.
Beets	Mr. Daniell.
Radishes	Mr. Grainger.
Seed Onions	Mr. Hayden.
Potato Onions	Mr. Hayden.
Grapes	Mrs. Bull.
Parsnips	Mr. Margetson.

Recommended by Judges.

Picotees and seedling Picotees	Mr. Fleming.
Double Pinks	Mr. Leslie.
Seedling Rhubarb	Mr. Leslie.
Exotic—Cactus Speciosissimus	Mr. Draper.
Well kept Apples	Mr. Tattle.

PRACTICAL HINTS FOR AMATEURS AND SMALL GARDENS.

TREATMENT OF CACTUSES IN WINDOWS, AND IN THE OPEN AIR.—The plants commonly called by the name of Cactus belong to the natural order Cactaceæ, but are known among botanists and scientific gardeners by various appellations more or less distinctive of their generic peculiarities; as, for instance, the Epiphyllum, from a Greek word signifying *upon a leaf*, in allusion to the flowers growing upon the flat stems, commonly called leaves; and the Cereus, so called from the waxy and plant nature of the shoots of some of the species; the Latin word *cereus* meaning waxy. Cactuses are very common in this country, on account of the rough treatment they will bear; for although they are natives of hot climates, as Brazil, Mexico, and Peru, and consequently are soon killed by frosts, yet in other respects

they are sufficiently hardy to allow of their general cultivation. They are magnificent objects at the stoves and conservatories of the wealthy, where they startle by the contrast between their gorgeous flowers and wrinkled unsightly stems; they also help to set out many a cottage window, and they are usually found to some extent among the floral collections of the middle classes. Yet with this general disposition to cultivate them few plants are less understood in those habits on which their successful flowering depends.

"I wish you would look at my cactus," said a lady to the writer the other day; "it is a very fine plant, but it never flowers." On being introduced to this unproductive occupier of a pot and window room, a fine piece of vegetation indeed presented itself; above a yard high, as green as grass, and every flat stem as plump as a traditional alderman. "Madam," said the writer, "you feed your plant too much, and in order to make it flower, you must at certain times adopt the starving system." He informed her that he had one of the same kind, and commonly called Cactus Jenkinsonii, not near so tall, and very inferior in *embonpoint* and general handsomeness, which yet bore above 100 flowers last season. The inquirer expressed her wonder at this, and received the following account of the method adapted to produce such a result; it is now submitted to those readers of the *Chronicle* who may wish to make fat and green Cactuses bring some tribute to their floral temple.

In the natural home of the Cactus, there is a moist and a dry season; during the former, vegetation receives a surprising impetus; during the latter it flags, and appears almost burnt up and destroyed. Cactuses may be seen shrivelled up through the heat of the sun and the dryness of the soil, but it is to this circumstance they owe their abundance of flower buds. The wet or moist season returns, and pushes those buds into a glorious life. How different is this natural treatment from that adopted in windows and often in greenhouses! The plants are kept wet all the year round; they have no cessation in their growth, but they form no flowers. Let Nature be followed, and the desired result is sure. My Cactuses were put away in the autumn into a lumber room, and have had no water since until the middle of last March. They were then brought out covered with dust, cleaned, and gradually supplied with water. They are now as plump as can be wished, and are covered with flower-buds. They will be kept supplied with moisture until the flowering is over; then they will take their chance in a sunny part of the garden, against a south wall, until cold weather comes and consigns them again to the lumber room.

A light soil, composed of brick rubbish mixed with loam and leaf-mould is best for them, and need not be changed every year, if the top is removed and a fresh layer put on every spring. Large Cactuses cannot be grown well in windows, and my plan with them is to put them out of doors every day, where they will have all the sun, and to bring them into the sitting-room just as they are about to flower. The whole tribe is easily propagated. The cuttings should have the wound healed before being potted, and no water should be given for a month or six weeks afterwards. Such is my simple plan.—*Gardeners' Chronicle*.

ORIGIN OF VARIOUS PLANTS.—Every farmer ought to be so far acquainted with the history of ordinary plants and trees as to know their nature, country and condition. Such knowledge, besides being on every account proper and desirable, will sometimes explain phenomena in their habits that would otherwise appear anomalous and inexplicable.

Wheat was brought from the central table land of Thibet, where it is original, and yet exists as a grass, with small mealy seeds.

Rye exists wild in Siberia.
 Barley exists wild in the mountains of Himalaya.
 Oats wild in Northern Africa.
 Maize (Indian Corn) found in America.
 Rice from South Africa, whence it was taken to India, and thence to Europe and America.
 The garden bean from the East Indies.
 The horse bean from the Caspian Sea.
 Buckwheat originally came from Siberia and Tartary.
 Rape seed and cabbage grow wild in Sicily and Naples.
 The poppy from the East.
 The sun-flower from Peru.
 Flax, or linseed, is in Southern Europe a weed in the ordinary grain crops.
 The radish from China.
 Garden cress out of Egypt and the East.
 Hemp is a native of Persia and the East Indies.
 The nettle, which sometimes furnishes fibres for spinning, is a native of Europe.
 Of dye plants, madder comes from the East; dyer's weed grows in Southern Germany; safflower comes from Egypt; dyers' knot-grass from China.
 Hops come to perfection as a wild plant in Germany.
 Mustard and carraway seed the same.
 Anise from Egypt, and the Grecian Archipelago.
 Koriander grows wild near the Mediterranean.
 Saffron from the Levant.
 The onion out of Egypt.
 Horseradish from South Europe.
 Tobacco is a native of Virginia, Tobago, and California. Another species has also been found wild in Asia.
 Fullers' teasle grows wild in Southern Europe.
 The grasses are mostly native plants, and so are clovers, except lucerne, which is a native of Sicily.
 The gourd is probably an Eastern plant.
 The potatoe is a well-known native of Peru and Mexico.
 Turnip and mangel-wurtzel come from the shores of the Mediterranean.
 Monalribi and white turnips are natives of Germany.
 The carrot is supposed by some to have been brought from Asia, but others maintain it to be a native of the same place as the white turnip.
 Amongst other kitchen garden plants, the spinach is attributed to Arabia.
 The cucumber from the East Indies.
 The melon from Kalmuck.
 Parsley grows in Sardinia.
 Celery in Germany.
 Of fruit trees and shrubs, the currant and gooseberry come from Southern Europe.
 The medlar pear and apple are likewise European plants; but the sickle, the best of pears, is traced to near Philadelphia, its original locality so far as known.
 The cherry, palm and almond came from Asia Minor.
 The walnut and peach from the same country.
 The citron from Media.
 The quince from the island of Crete.
 The chestnut from Italy.
 Of forest trees, the majority are natives of England, except the pine and horse-chestnut, the former of which was brought from America, and the latter from Thibet.
 But the greatest variety of oaks, and other fine timber trees, are natives of North and South America.
 The whortleberry is a native of Asia, Europe and America.
 The cranberry, of Europe and America.

EFFECTS OF THE PAST WINTER ON TREES.—From many portions of the Western States we have information that the severity of last winter has been exceedingly destructive to trees. A friend in Illinois, says:—
 "All of our orchard peaches, and most of our choice

cherries, (and we had 'a good few' of them, as our Yorkshire neighbour says,) are dead—defunct, *winter-killed*; not blighted a la—, but killed by cold. And many, too many, of our pears are in the same fix, and *etke some*. Our two or three years old nursery peaches mostly dead, and one year old two-thirds dead, and last year's buds half dead. Most of the *native seedlings still alive*, and on the lower limbs (which were buried in snow,) there were abundance of flowers, and will be some fruit. Mr. —, of Wisconsin, writes me that nearly all of his pears and plums in the nursery are dead, and also many apples."

The nursery business here has quite enough of toil and trouble for us, but in a climate like that of portions of the west, how must it be? What a thorough cure such experience as the above would be for some persons who seem to be labouring under a delusive idea that the nursery business is one of the most lucrative and delightful in the world. Before they get into it they dream of fruits and flowers, pleasure and riches; after they get fairly embarked in the matter, they sometimes dream of *excessive cold, heat, frost, snow, hail-storms, blight, insects, rain, drought*, and a thousand other things that annoy the poor cultivator.

In Western New York we had a remarkably severe winter, but vegetation seemed to suffer very little. We have not seen a single tree, old or young, winter killed. Pawlonias, Ailantus, Catalpas and other tender trees are quite uninjured. Young Deodar Cedars, Auracarias, and other evergreens planted out last summer, and not protected at all during the hardest part of the winter, are perfectly safe. Roses generally, had more of their tops winter killed than usual, but this has done them very little harm.

Fruit trees are very promising, as we stated in the June number. Apricots, Nectarines, Peaches, Plums, Apples, and indeed all the fruits, are bearing at this moment an abundant crop. The young trees in the nursery never looked better. The buds of peaches, pears, plums, and indeed all the fruits look unusually well. This is a great contrast with the state of things in Illinois, Wisconsin, &c., which our friends communicate.—*Genesee Farmer*.

TO DESTROY THE APHIS ON ROSE TREES OUT OF DOORS.—In the *Ladies' Companion to the Flower Garden*, under the article of Aphis, Mrs. Loudon advises to make a decoction of quassia, in the proportion of an ounce of chip to a pint of water, and dip the infected branches of roses into it. This cannot be done on a large scale, but I have found the use of the decoction so valuable that it ought to be more generally known. My mode of using it is as follows:

Having made in the outset a small quantity in the above proportions, and tested it as a guide for my future use, I now make from two to three gallons at a time in a large iron boiler. When cold, on a fine day, throw it on your rose bushes by means of a garden syringe, taking care to wet the under as well as the upper surface of the leaves. In two day's time you will see thousands of the insects adhering to the leaves, but quite dead. Then syringe the bushes with plain water, using considerable force, to wash off the dead aphides. You will no doubt observe many still living, as it is almost impossible to wet them at one operation. Repeat the syringing with the decoction, and afterwards with the water.—*The Rose Garden*, by Wm. Paul.

SPOKEN AGAINST.—What if people do speak against you? Let them feel that you are able to bear it. What is there gained by stooping to correct every word that is whispered to your discredit? Lies will die, if left alone. Slander never kills a sterling character.

Mechanics and General Science.

COLONISATION THE PIONEER OF CIVILIZATION.

The new impulse reserved for our century is colonisation. Always existing, even from the earliest ages of mankind, it had hitherto scarcely deserved the name. The French colonisation of Canada had not advanced, in a century, beyond the nook where they first nestled themselves, and where the most absurd of all policies—that of allowing them to place their language on a footing with the manlier tongue of their conquerors—has perpetuated them as a separate race, with all their absurdities, all their prejudices, and even with all their hostility to the British name. The Spanish colonisation of South America amounted to scarcely more than settling the descendants of the Spanish garrisons, of the Spanish refugees, and of the attendants on the viceroys.

The only true *colonists* were the English of North America; who, for a hundred years, poured a feeble stream towards the prairies of the Mississippi, recruited and stained by the vagabondage of Europe. But no great impulse of national necessity gave depth and force to the current. But within these two years a more powerful impression has been made by necessity. The Irish famine of 1846, and the following year, drove multitudes to seek for bread on the shores of America. Some hundred thousands probably have left Europe behind for ever, and are now delving and woodcutting in the forests of the western world. A German emigration, though of a more tardy order, has followed, from a pressure, if not of direct famine, yet of difficulty. And within the last year a powerful impulse has also been made in the direction of Australia, of all countries the one which offers the fairest prospect for the Englishman. The success of these emigrations will naturally tend to continue the outpourings of Europe. The emigrants, once settled and successful, will encourage the movement of those whom they have left behind, as much embarrassed as they themselves originally were; and the comforts which come into the possession of industry, in a land of cheap purchase—unburdened with taxes, and unburdened with the still heavier taxes which the vanities of old countries lay on the myriads of middle life—must form a strong temptation, or rather a rational inducement, to seek independence at the antipodes.

But the sudden discovery of the Californian gold-country has given a still more determined urgency to emigration. That a vast territory, which, if we are to rely on the reports of its labourers, is a sheet of gold, should have lain for three hundred years in the hands of the Spaniards, wholly unknown to a people always hungry for gold, is among the wonders which sometimes strike across us in the history of nations. But its immediate effect is, unquestionably, to aid the general tendency. It is already drawing thousands from every part of the world towards California. Columns of men, followed by their trains of oxen and wains of merchandise, are already pouring over every track of the West. In a few years, the desert will probably be filled with population; and when the mines are exhausted, or taken into the possession of the government, the more valuable mine will remain, in the existence of a new nation, in the commerce of the Pacific, and in the richness of a soil unploughed since the Deluge.

The effect of this emigration, for the moment, is obviously to assist the reception of the multitudes from Europe. It is thinning the population of the United States, carrying off the labourers, and turning every unoccupied eye in the direction of the west. The drudgery of Ireland, the skilled labour of England, and the patient and not unintelligent toil of Germany, will daily find the mart more open; and thus even the mania of gold-digging will have its effect on the sober welfare of mankind.

But a still more important effect, though more remote, may follow from the Californian mines. The celebrated Burke, sixty years ago, predicted that the new population on the plains of the Mississippi would extinguish the power, if not the existence, of the cities on the coast, and that when those "English Tartars," as he imaginatively described them, once poured down on the New Yorks, Bostons, and Philadelphias, they would turn them into warehouses, and their sites into watering-places. They would have fulfilled his prophecy long since, but for the boundless expanse of territory which lay behind this "Tartar" region. Their discontents evaporated into the wilderness; the provincial who looked with a jealous eye on the man of cities, found it easier to travel than to make war; and he forthwith set up a state for himself in the boundless prairie. A Californian republic may erect a formidable balance to the domination of the old States. Washington will no longer be the capital of America, and the north of the New World may yet have a stronger resemblance to Europe—with its great kingdoms, its little princes, and its commercial cities—than the anomalous government of the Stripes and Stars.

But the noblest of all the projects which have ever excited the curiosity of the world is still to be consummated—the communication between the Atlantic and the Pacific—a canal across the Isthmus of Darien. That Isthmus is but twenty miles broad, but a passage across it would shorten the voyage to China, perhaps to six weeks, instead of four months; annihilate the perils of the navigation round South America, and bring Europe into rapid contact with Australia, India, and the unexplored glories and exhaustless opulence of the finest archipelago in the ocean.

The project is so natural that it had been a hundred times conceived; but the perpetual wars of Europe, the angry jealousy of Spain, and, in later years, the disturbances of the native governments, have wholly obstructed the mightiest benefit ever offered to the progress of civilisation. The enterprise of the Americans had not overlooked this key to both hemispheres, and, some years since, a compact was entered into with a company headed by the American Biddle. But it was suffered to die away; other contracts succeeded, equally abortive, the government on the spot demanding terms of such exorbitance that it was impossible to carry the work into execution. With the usual short-sightedness of the foreigner, they had placed all their profit on the rent and tolls of the canal, foolishly forgetting that their *real* profit was to be found in the wealth which the intercourse of all nations must bring into their country.

Two projects are now said to be under consideration—a railroad, which would be exclusively for the benefit of the Americans; and a canal capable of carrying large vessels across the Isthmus, and which would be open to all nations. There can be no question as to the superior benefits of the latter to mankind.

Of the five routes, four are exposed to obstacles arising from elevation of ground, (the track to Panama rises a thousand feet), from insalubrity, and from other circumstances of the soil and the locality. The fifth, by the river of Nicaragua, evidently deserves the preference. It lies through a fine river, reaching from the Atlantic to a central lake, and thence descends through a second river to the Pacific. The whole distance would be but two hundred and seventy-eight miles, which would require locks and other works (the rivers being at intervals interrupted by rapids) but this portion would amount to but eighty-two miles. The lake-sailing would be a hundred and twenty-five miles. The whole expense, estimating it at the prices of Europe, would be less than four millions sterling. Sanguine calculators value the profits at twelve per cent. But whatever might be the smallness of the dividends in the first instance, there can be no imaginable doubt that, with fair

dealing on the part of the local government, the Isthmus would soon be worth all the mines of Peru, with all the gold-washings of California besides.

The next great enterprise would be the junction of the Mediterranean and the Red Sea, by a passage across the Isthmus of Suez. There is already a road, but the passage is slow and difficult, from the heat, the soil, and the imperfect conveyance. Two proposals have been long since made, the one for a canal and the other for a railroad. To the canal there seems to be insuperable objections, the shallowness of the sea at Suez, the shifting nature of the sands on the way, which would soon fill up the canal, and the difficulty of water for its supply. It has been also ascertained by the survey of the French engineers that the Red Sea is about thirty feet higher than the Mediterranean.

The railroad is obviously not merely the true expedient, but the only one. But it is almost impossible to deal with the foreigner on any subject of prospective profit. The habit of living but for the day deteriorates all the movements of national progress. Unless he can grasp his profit at once, it exists no longer to his eye. With the man of the East the grasp is eager and avaricious. Mehemet Ali might have brought millions of wealth into Egypt by a railroad, while he was wasting thousands in paltry contrivances to make a royal revenue for himself, out of the contending bargains of English and French engineers. The result is, that except a miserable canal between Alexandria and the Nile, dry half the year, and scarcely navigable during the other half, nothing has been done; and the journey across the isthmus occupies nearly two days, gives infinite trouble, and makes money only for donkey-boys and tavern-keepers, which, by a railroad, might be effected luxuriously in three hours.—*Johnston's Physical Geography.*

[Some opinions are expressed by Mr. Johnston in the foregoing article, political in their aspect, with which we must not be identified.—*Ed. Ag.*]

LECTURE ON THE STRUCTURE, FUNCTIONS AND
CHEMISTRY OF PLANTS, DELIVERED BEFORE
THE WEALD OF KENT FARMERS' CLUB,
BY DR. PLOMLEY.

In undertaking to introduce to your consideration the connection between agriculture and vegetable physiology, a few preliminary explanations and apologies may be naturally expected. Viewing agriculture as the most interesting science, and the most useful art, it occurred to me that it was entitled to the services of every one, to the best of his ability and acquirements, however limited the one may be, and however few the other. Agriculture has derived valuable assistance from the natural sciences, but, up to the present time, very little attention has been paid to the application of the doctrines of the physiologist to its illustrations; and this is the more to be regretted, as almost every operation performed on the farm is more intimately, or more remotely connected with this subject of inquiry.

I may further mention that my object in this lecture is not the advancement of views that are new to science, but rather to bring before you in as ample and intelligible language as I can, all that is known on the subject, and point out the connection between these facts and observations, and every day field operations; and I submit all with the greatest deference to your practical experience.

A lecturer in chemistry has many circumstances in his favour in addressing an audience; he receives attention and illustrates his remarks by the exhibition of interesting and brilliant experiments, and any one calling your attention to agricultural mechanics might exhibit models of machines and implements, and interest you with certified accounts of their extraordinary capabilities

in performing work at a small expenditure of labour and time. On the present occasion I can avail myself of none of these accessories, but merely lay claim to instruct, rather than amuse; and, I solicit your attention whilst I make a feeble attempt to explain to you some few of the most prominent principles of vegetable growth, a knowledge of which will enable you to understand the wonderful machinery of plants, through the agency of which the air and the earth are converted, under your guidance and assistance, into the food of man and animals. Plants and animals, and, indeed, all organized beings, however complex their structure and valuable their properties, are composed of very few elementary substances, when they are considered chemically, and many that are most opposite in appearance and properties, are nearly identical in chemical constitution.

All vegetables, from the mushroom to the oak, are composed of merely four elementary substances. They are carbon, hydrogen, oxygen, and nitrogen. Hydrogen, oxygen, and nitrogen are airs or gases. Carbon is a solid substance which, in the rough state, is charcoal, in the pure and crystalized, diamond.

The hydrogen is obtained from water, the carbon or charcoal from carbonic acid gas, the oxygen from the air, and nitrogen from ammonia.

These four elements, carbon, hydrogen, nitrogen, and oxygen, form in living plants a variety of compounds, but there are only two classes of these compounds that have a deep importance to man and animals, and they are indeed most important to the grower of plants, and the feeder of animals. These two classes of compounds are called nitrogenous, or flesh producing, and carbonaceous, or heat producing, both essential to animal existence.

The first, the nitrogenous, or flesh producing compounds, are composed of all four of these elements, carbon, hydrogen, nitrogen, and oxygen, in the shape of gluten and albumen, which in animals form flesh, and without which no part of an animal body can be formed; and when life becomes extinct this flesh becomes resolved again into water, carbonic acid and ammonia fit again for the food of plants. The second class of compounds called the carbonaceous, or heat producing, are formed of three only of these elements, carbon, hydrogen, and oxygen, without the nitrogen; these are starch, gum, sugar, and the liquors prepared from them, as beer, spirits, and wine, &c., and also all kind of oil and fats; these pass through the body, and are burnt off in the lungs, producing heat only, and in so doing are again converted into carbonic acid and water, fit for the food of plants.

We are made aware by the discoveries in chemistry and physiology, that the animal body is incapable of forming any of these substances which are absolutely necessary to its development and support; that every animal must receive substances ready prepared, in order to supply them to its nutrition, its growth, and to the formation of its bones, its muscles, its nerves, &c., and therefore the flesh producing compounds are the exclusive materials for nutrition. Every man requires five ounces daily, merely to supply the usual waste of the body. These cannot be replaced by any other substance, and when withheld, the body must die of starvation. The carbonaceous, or heat producing compounds, must be present also in the body for fuel. Every man consumes, when at rest, eight ounces of carbon daily, and when in exercise, fourteen ounces; a horse consumes seventy-nine ounces in a day. These substances, usually called food, are materials for respiration only. They are consumed in producing the warmth of the body. When we compare these substances necessary for the maintenance of the animal body, with the contents of plants, which serve for the food of man and animals,

we find that in all plants, in all their organs, a certain quantity more or less of both of these classes of compounds dissolved in the sap, or deposited in the seeds and bulbs.

Now this leads to the important fact, as before stated, that animals have not the power of creating any of these organic substances, and that the whole animal world lives upon the vegetable kingdom exclusively; it is in the vegetable kingdom, therefore, that the great laboratory of organic life is found; it is there that both vegetable and animal substances are compounded.

Now comes the question, what do plants live upon? The reply to this and its correct solution is the most important that can engage the agricultural chemist, and, indeed, of every human being; and, in order to understand the changes which inorganic matter undergoes in its conversion into the materials fit for the food of man and animals, it will be necessary to know something of the structure and functions of plants, which are the only machines by which these wonderful results are produced.

A perfect plant is made up of a number of different parts or organs. The root, the stem, and leaves, which form the organs of nutrition and growth.

The flowers and seeds which form the organs of reproduction. The roots are for fixing the plant in the soil, and also for absorbing fluids containing various soluble substances.

The stems are for conveying liquids to the leaves, for giving stability and firmness, so as to elevate the leaves to the air, and expose them to light.

The leaves are the organs by which the crude sap, absorbed by the roots, and transmitted by the stem, is converted by the air and light into nutritious sap, from which all vegetable substances are formed.

The flowers, the fruit, and the seed, are the organs of reproduction, and contain the germs of future plants.

All these parts constitute what we call an entire plant, and all formed or made up of a mass of cells, or little closed sacks joined together in all directions, putting on various shapes and forms, which variation of shape depends, frequently, but not altogether, upon the pressure they may be subject to, and also the direction and force of the circulating juices. Before we proceed further, it will be necessary to understand the structure and functions of these cells, especially when we consider that all plants as well animals, formed on the earth's surface, are not only made up of a mass of them, but that they make their first appearance under the form of a cell, and that in the lowest forms of vegetables and animals, this cell forms the whole plant or animal. A review of the life of the cell then must necessarily precede the endeavour to comprehend the whole plant. When the cell forms the whole plant, as it does in moulds, mildews, and blights of corn, as red rust, smut, and bunt, or when the cell forms the whole animal, as it does in some infusoria, it is an independent being, it lives for itself alone, it imbibes fluid nourishment from without, out of which it forms new substances, part of which goes to its growth, another part is laid up in store for future requirements, and another portion is expelled as useless, to make room for the entrance of new matter; in a short time the cell comes to maturity; it then divides, or a number of small grains are formed in the inside of the cell. These are the germs of new plants, and when liberated by the rupture of the parent cell, go through precisely the same series of changes.

But it will naturally be asked how the cell, which is a closed sack, obtains fluid from without; this is effected by a physical law, called endosmosis. If two fluids of different densities, as water and brine, be separated only by animal or vegetable membranes, the light fluid, the water, will pass through into the brine, or denser fluid, and in a small degree also the denser fluid will pass into

the thinner, in this case it is called exosmosis, so that in whatever part of a plant the fluids are the most dense, there will be the greatest circulation and the greatest activity.

This is the only cause of circulation in all parts of plants consisting of cells, but in those plants possessing ducts or tubes, which, as we shall presently see, are only cells elongated; another physical agency comes into play, which is the force of capillary attraction; it is known that in delicate tubes which have their extremities immersed in a fluid; the level of the fluid within the tubes becomes raised above that of the fluid without, and this, in proportion to the smallness of the tubes; so that, in this capillary attraction of the tubes of plants, and the absorption by the cells called endosmosis, we have sufficient cause to produce the rise of the sap, and the existence of these two causes is capable of direct experimental proof.

The effect of this law of endosmosis possessed by membranes is beautifully seen in our own bodies. Spring water, containing no salts, and therefore of much less density than the blood, if swallowed into the stomach is taken up into the blood vessels with great rapidity. Now if this water should contain the same quantity of salts as the blood, it would remain untouched by the blood vessels and produce a feeling of weight. But if we drink a solution containing more salt than the blood, and therefore of greater density, the fluids of the blood will pass through into the solution, and purgation will be the consequence, as in the case of taking Epsom salts, or common salt.

This power of absorption by endosmosis is destroyed by certain substances as opium and tannin.

PHYSICAL GEOGRAPHY.

Of all modern sciences, the science of the globe has made the most rapid, the most remarkable, and the most important progress. Bacon makes the fine remark, that while the works of man advance by successive additions, the works of Nature all go on at once; thus the machinist adds wheel to wheel, and spring to spring, but the earth produces the tree, branch and bark, trunk and leaf, together. There is something analogous to this combined operation in physical geography: a whole crowd of remarkable discoveries seem to have burst on us at once, expressly designed to invigorate and impel our progress in geographical science. Thus, our century has witnessed new phenomena of magnetism, new laws of heat and refrigeration, new laws even of the tempest, new rules of the tides, new expedients for the preservation of health at sea, new arrangements for the supply of fresh food, and even for the supply of fresh water by distillation, and all tending to the same object—the knowledge of the globe.

The use of steam, to which modern mechanism has given almost a new existence, and certainly a new power—the conquest of wind and wave by the steam-ship, and the almost miraculous saving of time and space by the steam-carriage; the new necessity of remote enterprise, originating in the urgency of commercial and manufacturing difficulties; the opening of the thousand islands of the Indian Archipelago, till now known to us as scarcely more than the seat of savage life, or the scene of Oriental fable; the breaking down of that old and colossal barrier of restrictions and prejudices, which, more than the wall of China, excluded England from intercourse with a population amounting to a third of mankind; and most of all, those vast visitations of apparent evil, which the great Disposer of things is evidently transmuting, year by year, into real good, by propelling the impoverished multitudes of Europe into the wildernesses of the world—all exhibiting a stupendous combination of simple means, and a not less astonishing convergency to the one high purpose, the mastery of the globe—place Physical

Geography at the head of the sciences essential to the happiness and power of human-kind.

PECULIARITIES IN THE VEGETABLE KINGDOM.—

The difference between animals and vegetables is so great, that, on a superficial view, we do not perceive any resemblance between them. Some animals only live in water; others on the earth or in the air; and some are amphibious, or capable of living either on land or in water. And this is literally the case with vegetables; some of them only grow upon land, others in the water; some can scarce bear any moisture; others either live in earth or water; and some even are found that exist in the air. There is a tree in the island of Japan, which, contrary to the nature of all other trees, to which moisture is necessary, cannot bear wet. As soon as it is watered it perishes; the only way to preserve it in such a case, is to cut it off by the root, which is to be dried in the sun, and afterwards planted in a dry and sandy soil. A peculiar species of mushroom, some mosses, and other small plants, float in the air; but what is still more extraordinary, a bunch of rosemary, which, as is the custom of some countries, was put in the hand of a corpse, sprouted out to the right and left so vigorously, that after a lapse of some years, the grave being opened, the face of the defunct was overshadowed with rosemary leaves.

The vegetation of the truffle is still more singular; this extraordinary tubercle has neither roots, stem, leaves, flowers, nor seeds; it derives its nourishment through the pores of its bark. But it may be asked how is it produced? Why is there commonly no kind of herb in the places where this species of mushroom grows? and why is the land there dry and full of crevices? These things have never been explained.

It exists in all seasons, even in winter; but is never so abundant as after rain in summer. The most remarkable circumstance about it is its speedy growth, being formed almost instantaneously: for sometimes, if we walk in the garden in summer, not a trace of it is seen; when a sudden shower of rain falling, if the same place is visited in an hour, the walks are entirely covered with it. The nostoch was long supposed to have descended from the sky; but it is now known to be a leaf, which attracts and imbibes water with great avidity. This leaf, to which no root appears to belong, is in its natural state when impregnated with water; but a strong wind or great heat soon dissipating the water, the leaf contracts, and loses its colour and transparency; hence it appears to grow so suddenly, and to be so miraculously produced by a shower of rain; for when the rain falls upon it in its dried and imperceptible state, it becomes reanimated, and appears a fresh production.

We might readily enlarge the list of plants which bear a resemblance to animals; but there are other peculiarities in vegetables which solicit our attention. The whole atmosphere is pregnated with plants and invisible seeds, and even the largest grains are dispersed by the wind over the earth; and as soon as they are transported to the places proper for them to germinate in, they become plants, and often so little soil is necessary for this purpose, that we can scarcely conceive whence they derive the necessary degree of nourishment. There are plants, and often trees, which take root and grow in the clefts of rocks without any soil whatever.

Vegetation is sometimes very rapid; of which we have instances in mushrooms, and the common cresses, the seed of which, if put into a wet cloth, will be fit for a salad in 24 hours. There are plants that exist with scarcely any perceptible vitality. We often see willows, which are not only hollow and decayed within, but their external bark is so much injured that very little of it remains; yet from these seemingly sapless

trunks buds sprout in the spring, and they are crowned with leaves and branches. It is truly wonderful that plants should not only imbibe nutriment by their roots, but that their leaves also should assist in this important function, by inspiring air; and an inverted tree will flourish, as well as when in its proper situation, for the branches will grow in the earth and become roots.

The advanced age that some trees attain to, is also very remarkable. Some apple trees are above a thousand years old; and if we calculate the amount of the annual produce of such a tree for the above space of time, we shall find that a single pippin might supply the whole world with trees and fruit. So extensive is this subject, that to follow it through all its ramifications would lead us on much too far for our present limits. All nature teems with wonders, every thing leads us on to an infinitely perfect Being, whose power, united to boundless wisdom and goodness, is continually acting for our benefit, and daily giving us fresh cause for gratitude and admiration.

How great and magnificent are Thy works, O Lord! What wonders crowd upon my mind! I view them with rapture, and am lost in the contemplation; they surpass my comprehension; I cannot fathom them. At Thy command the grass shoots forth its green blade, and the woods are clothed with verdure; the flowers adorn the fields and beautify the gardens with their glowing colours; the tree lifts up its tall head to the clouds, and the mountain cedar declares Thy glory! Wherever I turn my view; new wonders delight me: the meadows, the mountains, and the valleys, the rivers, the seas, and all, from the least atom to the distant spheres in the heavens, declare Thy goodness and display Thy glory!

INSTANTANEOUS ICE.—In addition to the extraordinary display of the American plants in full bloom at the gardens of the Royal Botanic Society on Saturday last, another very curious exhibition was presented; ice-making, under the direction of Mr. Masters, the well known confectioner in Regent-street. A large assemblage of the fashionable visitors manifested great curiosity as to the means by which Mr. Masters kept continually producing ice creams, and even solid blocks of ice, as instantaneously as a cook will produce egg-flip. We heard many exclaim that it was incredible that the delicious ices, with which they were refreshing themselves, could have been produced by machinery without the aid of natural ice. Ocular demonstration of the fact, however, was given to all who could get within the magic ring of Mr. Masters's refrigerators, or freezing apparatus. The invention is constructed in a great variety of forms, some of which show remarkable mechanical ingenuity, and are, at the same time, highly ornamental. They vary in size. With one of the larger apparatus a quantity of ice may be produced in about twenty minutes sufficient to supply a party of 300, by simply causing a chemical mixture to be dissolved in water, and mechanically agitated in the apparatus till ice is produced in a chamber containing the fluid to be frozen. The chemical mixture it also the invention of Mr. Masters, and, as an article of commerce, is not more expensive than rough ice. Rough ice, however, can be used in this apparatus, whenever it can be obtained at less expense, as a substitute for the mixture. The portability of the mixture gives it a decided advantage over natural ice, where an ice-well is not at hand, as in tropical climates, for the mixture is not affected by heat, or atmospheric changes. One form of the invention seems well calculated for family use. In shape it resembles an elegant flower vase, and is in size about twice the dimensions of the ordinary wine bottle, while its cost is remarkably moderate. With this small apparatus, which a child can manage, we saw

repeatedly produced, in five minutes, solid ice weighing about a pound, and ice as pure as that from spring water in the frostiest winter; indeed, pure spring water is used, and Mr. Masters' ice thus produced is quite equal in flavour to that of the Wenham Lake ice. In fine, the lover of frigid luxuries may, by the aid of the ice apparatus, command, at any time and in any climate, at a few minutes' notice, a supply of any cooling dainty, from a sherry cobbler to a castellated tower of ice sufficiently capacious to stow away a week's provisions, of varied kind. Mr. Masters announced that he had arranged to exhibit these curious processes daily at his city depot in Mansion House Street. He is known also for other ingenious inventions.

SWEET OIL OF TURPENTINE.—There are many useful things, which, like many highly respectable individuals, have their full portion of the disagreeable. Among such things is turpentine, exceedingly useful and thoroughly disliked for its peculiar fulness of odour, by ladies and amateurs especially. The "Sweet Oil of Turpentine Co.," in Bream's-buildings, Chancery-lane, have obviated this objection to using turpentine in painting, in cleaning pictures, apparel, or indeed any of many applications of the liquid. The excellence of the discovery is certified by Dr. Serny, and it goes rather beyond what we have specified—the disagreeable odour is expelled and a perfume substituted. You may now "turpentine" your handkerchief!

PAPER SPLITTING.—This is a recent invention, which, although of considerable importance and extensive application, has been hitherto little known or practised—indeed, scarcely at all beyond the moderate sphere of the few discoverers themselves. It may, indeed, he perhaps asked of what use can the splitting of a sheet of paper be? Now we understand that the art can be, and has been, applied to the separation of holographs and indorsations from written documents; and from the circumstance of the directors of the Bank of England having, a few months back, attached great importance to the splitting of a bank-note, much curiosity has been excited on the subject. The means, however, by which that note was split was kept a secret by the person who performed the task, so that in so far as the public are concerned, they have remained as much as ever ignorant of the art. Since then various modes have been prepared by different individuals for effecting the same object, and there are some who are said to have more or less succeeded by a means discovered by and known only to themselves, but up till the present time, if such discoveries have been made, they have been uniformly kept secret by the discoverers for their own special use and benefit. Now, however, a discoverer offers to teach this very ingenious art.

INSECT SLAVERY.—The most remarkable fact connected with the history of ants is the propensity possessed by certain species to kidnap the workers of other species and compel them to labour for the benefit of the community, thus using them completely as slaves; and as far as we yet know, the kidnappers are red or pale-colored ants, and the slaves, like the captured natives of Africa, of a jet black. The time for taking slaves extends over a period of about ten weeks, and never commences until the male or female are about emerging from the pupa state; and thus the ruthless marauders never interfere with the continuation of the species. This instinct seems especially provided; for were the slave ants created for no other end than to fill the station of slavery to which they appear doomed, still even that office must fail, were the attacks to be made on their nest before the winged myriads have departed or are departing, charged with the duty of continuing their kind.

When the red ants are about to sally forth on a marauding expedition, they send scouts to ascertain the exact position in which a colony of negroes may be found. The scouts having discovered the object of their search, return to the nest and report their success. Shortly afterwards, the army of red ants marches forth, headed by a vanguard, which is perpetually changing; the individuals who constitute it, when they have advanced a little before the main body, halt, falling into the rear, and being replaced by others. This vanguard consists of eight or ten ants only.

When they have arrived near the negro colony, they disperse, wandering through the herbage and hunting about, as aware of the propinquity of the object of their search, yet ignorant of its exact position. At last they discover the settlement; and the foremost of the invaders, rushing impetuously to the attack, are met, grappled with, and frequently killed by the negroes on guard. The alarm is quickly communicated to the interior of the nest; the negroes sally forth by thousands, and the red ants rushing to the rescue, a desperate conflict ensues, which, however, always terminates in the defeat of the negroes, who retire to the innermost recesses of their habitation. Now follows the scene of pillage. The red ants, with their powerful mandibles, tear open the sides of the negro ant-hills, and rush into the heart of the citadel. In a few minutes each invader emerges, carrying in its mouth the pupa of a worker negro, which it has obtained in spite of the vigilance and valor of its natural guardians. The red ants return in perfect order to their nest, bearing with them their living burdens. On reaching their nest, the pupa appear to be treated precisely as their own; and the workers when they emerge, perform the various duties of the community with the greatest energy and apparent good will. They repair the nest, excavate passages, collect food, feed the larvæ, take the pupa into the sunshine, and perform every office which the welfare of the colony seems to require. They conduct themselves entirely as if fulfilling their original destination.

CURIOUS PROGNOSTICATORS OF THE WEATHER.—The following Notes were made by Mr. E. J. Lowe, and may be useful as practical prognosticators of the weather. There are one or two very curious items in this table—for instance, that in 14 cases where landrills were clamorous, 13 were followed by fine weather in 24 hours, and only one by rain; again (a reverse case) in 25 cases where cabbages and turnips were lowering, only five were followed by fine weather, and 20 by rain. The whole of the observations, indeed, are curious, and the table deserves a record among the other documents of meteorological observers:

	No. of observa- tions.	Followed in 24 hours by	
		Fine.	Rain.
Solar halos.....	204	133	71
Lunar halos.....	102	51	51
Mock suns.....	35	19	16
Mock moons.....	9	7	2
White stratus in the valley.....	229	201	28
Distance clear.....	191	61	41
Distant sounds heard as if near at hand.....	45	25	20
Aurora Borealis.....	76	49	27
Lunar Burr.....	64	47	17
Coloured clouds at sunset.....	35	26	9
Black stratus.....	6	3	3
Burr round Venus.....	6	4	2
Whirlwind.....	4	4	0
Dew profuse.....	241	198	43
Dew from 1st April to 30th September.....	185	161	24
Dew from 1st October to 30th March.....	56	37	19
White frost.....	73	59	14
Falling stars abundant.....	85	65	20
Stars bright.....	83	64	10
Stars dim.....	54	32	22
Sun pale and sparkling.....	51	27	24
Smoke rising perpendicularly.....	6	5	1
Moon shining dimly.....	18	12	6
Sun red and shorn of rays.....	34	31	3

Stars scintillated	14	..	12	..	2
Moon rose of a red colour.....	8	..	7	..	1
Sun shone through thin cirrostrati.....	13	..	6	..	7
Bats flying about in the evening.....	61	..	45	..	16
Many toads in the evening.....	17	..	12	..	5
Many snails about.....	29	..	15	..	15
Fish rise much in the lake.....	15	..	9	..	6
Bees busy.....	29	..	19	..	10
Many locusts.....	8	..	4	..	4
Cattle restless.....	24	..	12	..	12
Landrills clamorous.....	14	..	13	..	1
Flies troublesome.....	22	..	12	..	10
Gnats troublesome.....	28	..	15	..	13
Many insects.....	24	..	13	..	11
Cows congregate and are clamorous.....	34	..	18	..	16
Spider webs thickly woven on the grass.....	13	..	9	..	4
Spiders hanging their webs in the evening.....	8	..	5	..	3
Ducks and geese clamorous.....	10	..	7	..	3
Cabbages and turnips lowering.....	25	..	5	..	20

In the above table it will be seen that fine weather predominates even in the prognostications for rain. That there are a greater number of fine days than there would be if we were to register the day rainy if followed by a slight shower, is owing in a small degree to the day being called fine unless sufficient rain has fallen to allow of its being measured in the rain-gauge.

THE COLOUR OF HOUSES.—The interior of a house should always be painted of a warm, neutral tint. Pure white is too cold and cheerless for a dwelling-room, and is, moreover, so liable to stains, that its appearance of purity and cleanliness, which is a great recommendation with neat housekeepers, very soon wears off.

The purity of our atmosphere, and the absence of coal smoke, admit of houses being painted a pure white; and where lead and oil are alone used in the open air, the color will grow whiter from exposure; but in the interior of a house it will become a dingy yellow, from being deprived of light and air. White lead improves by age, and should not be used for wood work unless at least a year old; linseed oil also becomes purer and better from age, and should be at least two years manufactured before used. Much harm results from the employment of incompetent workmen in the painting of houses, as from their inexperience in mixing paints, and their inability to distinguish between good and bad materials, the employer often throws away his money, and defaces the appearance of his house in the attempt to beautify it by a coat of paint.

In painting a house any light color, particular care should be taken to *kill* the knots in pine wood, as it is technically termed, or the effects of the first painting will be greatly marred. The best method of destroying the turpentine contained in pine knots is by spreading upon them freshly slacked lime, which will effectually burn it out. After this has been done, the knots must be covered with a sizing, composed of red and white lead and glue.

In painting the outside of a house, there should be no turpentine mixed with the paint, excepting in the case of white paint, and then only in the last coat; not more than one part turpentine to four parts oil should be used, as oil has a tendency to discolor white.

White lead forms the basis of all pigments for house paintings except black, which is generally composed of lampblack; but a new mineral substance has recently been discovered in New Jersey, which forms a beautiful jet black, and resists the action of the atmosphere and water better than any paint yet made. It has already been extensively used on ships, and will probably entirely displace every other kind of black paint before long. Not much black paint is ever used on houses, although it is extensively employed for fences and iron work; and as it is important to use a material that will resist the action of the atmosphere in ornamental iron work, which is so soon destroyed by rust, the discovery of this new mineral pigment is a matter of importance to builders. We have seen some specimens of this new

paint, which were remarkable for brilliancy of color and hardness of surface. A steam mill has been erected for manufacturing this article, and we shall be able to give more definite information respecting it before we conclude our remarks upon this subject.

The colors and tints proper for house painting, such as browns, drabs, yellows, pea-green, grays, and imitations of stone color, are made by mixing, with white lead and linseed oil, the following colors, which should first be finely ground in oil:

Drabs—Chrome yellow, lampblack, and red; or Venetian red and burnt umber, with white.

Brown Stone color—Spanish brown, chrome yellow, and lampblack, with white.

Grey Stone—Lampblack and Venetian red, with white.

French Grey—Indian red, Chinese blue, and ivory black, with white.

Sage color—Raw umber, Prussian blue, and Venetian red, with white.

Slate color—Black and Venetian red, with white.

Dark Blue—Prussian blue, with white.

Sky Blue—Ultramarine or Prussian blue, with white.

Violet—Vermilion, blue, and black, with white.

Lilac—Drop black, ultramarine, and crimson lake, or Indian red, with white.

Peach blossom—Carmine and ultramarine, with white.

Rose color—Crimson lake and vermilion, with white.

Salmon color—Chrome yellow and Indian red or burnt sienna, with white.

Straw color—Yellow ochre and orange chrome, with white.

Buff color—Venetian red and yellow ochre, with white.

Pearl White—Ultramarine, crimson lake, and ivory black, with white.

French White—Indian red, ivory black, Chinese blue, or ultramarine, with white.

Fawn color—Yellow ochre and Spanish brown; or Venetian red, blue and umber, with white.

Pea Green—Yellow and blue; or chrome green, with white.

Green—Prussian blue and chrome yellow.

Olive Green—Chrome yellow and black; or raw umber and black.

Bronze Green—Black and green; or chrome yellow and black.

Orange—Chrome yellow and vermilion.

Chocolate—Spanish brown and black; or Venetian red and black.

There are various other modes of producing the above shades, but simplicity and economy are the objects we have in view. The gradation of shades produced by a varied portion of these colors is almost indefinite.

Small quantities of the coloring matter should first be added to the lead, and continued till the right shade is procured. Enough should be mixed at one time to cover all the woodwork required with one coat.—*Ranlett's Architect.*

VINEGAR.—Many families purchase their vinegar at a very considerable expense; some "make do" with a very indifferent article; and others, for want of a little knowledge and less industry, go without. It is an easy matter, however, to be at all times supplied with good vinegar, and that without much expense. The juice of one bushel of sugar beets, worth twenty-five cents, and which any farmer can raise without cost, will make from five to six gallons of vinegar, equal to the best made of cider or wine. Grate the beets, having first washed them, and express the juice in a cheese press, or in many other ways which a little ingenuity can suggest, and put the liquor into an empty barrel; cover the bung with gauze, and set it in the sun, and in twelve or fifteen days it will be fit for use.—*Farmer's Advocate.*

Domestic and Miscellaneous.

THE FARMER'S BOY.

I should like to guide a plough;
Cut a furrow clean and straight;
Run a-field and fetch the Cow;
Eat my luncheon on a gate.

Drive the team a-down the lane,
Happy as I trudge along;
Shout the rooks from off the grain;
Whistle back the blackbird's song.

Would I mind the frost or snow?
Not a bit if warmly clad;
Would I loiter as I go,
Like an idle, louty lad?

No; I'd rise with early morn,
Busy on throughout the day;
Idle hands but pluck a thorn,—
Honest work's as good as play.

When I lay me down at night,
Oh, how soundly shall I sleep!
Whether it is dark or light,
Safely me my God will keep;—

Keep me if I seek his love,
Rest upon his promised aid:
While I trust in One above,
If I rest or if I rove,
What shall make my heart afraid!

[A correspondent requests us to publish some receipts for making domestic wine. We copy the following from Mrs. Rundell's popular treatise on *Domestic Cookery*, and have no doubt but they will be found useful to many of our fair readers.]

ELDER WINE.—To every quart of berries put two quarts of water *boil* half an hour, run the liquor and break the fruit through a hair sieve; then to every quart of juice put three-quarters of a pound of Lisbon sugar, coarse, but not the very coarsest. Boil the whole a quarter of an hour, with some Jamaica peppers, ginger, and a few cloves. Pour it into a tub, and when of a proper warmth, into the barrel, with toast and yeast to work, which there is more difficulty to make it do than most other liquors. When it ceases to hiss, put a quart of brandy to eight gallons, and stop up. Bottle in the spring or at Christmas. The liquor must be in a warm place to make it work.

BLACK CURRANT WINE.—To every three quarts of juice, put the same of water unboiled; and to every three quarts of the liquor, add three pounds of very pure moist sugar. Put it into a cask, reserving a little for filling up. Put the cask in a warm dry room, and the liquor will ferment of itself. Skim off the refuse, when the fermentation shall be over, and fill up with the reserved liquor. When it has ceased working, pour three quarts of brandy to forty quarts of wine. Bung it close for nine months, then bottle it, and drain the thick part through a jelly-bag until it be clear, and bottle that. Keep it ten or twelve months.

RASPBERRY OR CURRANT WINE.—To every three pints of fruit, carefully cleared from mouldy or bad, put one quart of water; bruise the former. In twenty-four hours strain the liquor, and put to every quart a pound of sugar, of good middling quality of Lisbon. If for white currants, use lump-sugar. It is best to put the fruit &c. in a large pan; and when in three or four days

the scum rises, take that off before the liquor be put into the barrel.

Those who make from their own gardens may not have sufficiency to fill the barrel at once; the wine will not be hurt if made in the pan, in the above proportions, and added as the fruit ripens, and can be gathered in dry weather. Keep an account of what is put in each time.

THOUGHTS FOR THE YOUNG.—The Garden of Eden was undoubtedly a place of surpassing loveliness. Its beautiful groves, its fragrant flowers, the melting richness of its fruits, its cool streams and limpid rivers, the choral strains of its feathered songsters, and the soft and balmy atmosphere, must all have conspired to render it a most delightful abode. We wonder that Adam and Eve could not have been contented, and let the forbidden fruit alone, so that we their posterity could have had access to the garden also.

But instead of mourning over the loss, we may as well look around us, and see whether there is not something yet left worth possessing. There is, after all, much that is lovely and beautiful in the earth, notwithstanding the dazzling glories of Eden have departed. The glowing beauties of the maiden have faded, but traces of that beauty still beam in the face of the matron. That man must have a morbid disposition, who can look out upon the face of the earth, on a bright morning in spring, when vegetation is bursting its fetters and unfolding its beauties, when the feathered tribe is filling the air with rich melody, and when the balmy fragrance of the atmosphere is courting into life the buds and blossoms of a thousand different plants, and discover no beauty, no loveliness. The mind endued with a right spirit will perceive much to admire, and will look through all these clustering beauties of nature up to nature's God, and discover his handy-work in the development of life, and all the various arrangements for the growth and maturity of the vegetable and animal world.

It is interesting to notice the perfect system and order that nature exhibits in all her works. She seems like a chemist in a vast laboratory, nicely weighing and measuring out various simple elements, and compounding them in such exact proportions, as to produce the most beautiful experiments in countless numbers. Man can only faintly imitate her, and wholly fails in the ability to give the life-inspiring principle, which fills the earth with joy and gladness.

But nature, or more properly nature's God, folds up this principle in the seed, where it may lay for a hundred or a thousand years, and then place it in circumstances to call it forth, and it will readily answer to the summons. In the hand of an Egyptian mummy, embalmed 3000 years ago, was found a small bulb. On being placed in the earth and exposed to moisture, it germinated, sent forth its leaves and produced a beautiful flower. The seed of other plants and grains have sometimes been found preserved under somewhat similar circumstances, which would readily germinate when placed in the ground. A chemical examination of seeds will show that they are composed principally of starch, which if kept dry, will undergo no change in any length of time; but if placed in the ground under circumstances favourable for germination, the starch disappears and is replaced by sugar and gum.

As illustrating the process of germination, take a bean, remove the outer covering, and the two lobes will be perfectly insipid and amylaceous, while between them will be found a minute germ, the embryo of the future plant. Place it in the ground, and soon the moisture will penetrate the outer covering, the lobes will swell and burst their envelope, the germ will send down a little radicle, and upward the imperfect form of leaves. If tasted now the lobe is no longer insipid, but

sweet and mucilaginous, because the starch is changed into sugar and gum. At the same time, numerous vessels run through the lobes for the purpose, as is supposed, of conveying these principles, as generous nutriment to the newly-born plant, until it has acquired sufficient maturity to procure other support for its welfare from the air and the earth; and when this happens, the sugar and gum entirely disappear from the lobes; they decay, and the plant is entirely dependant on the leaves and the root for its future support.

The silent and almost miraculous process of germination will only take place under certain conditions. In the first place, darkness is essential, and plants will not sprout if exposed to constant light; and yet no sooner have the leaves appeared than light becomes absolutely essential to a healthy and vigorous growth. In the second place, a due temperature is essential, which must always exceed 32 degrees, and never exceed 100 degrees Fahrenheit. It also requires a liberal supply of moisture, and perfect access of air; and all these agents, light, heat, moisture, and air, must operate conjointly or at the same time. Bury the seed deep in the earth, and so situated it will not germinate nor decay, but remove it near the surface, so as to be subjected to the influence of air, moisture and heat, and it will quickly start into life, and its emerging plumula or leaf become verdant under the influence of the solar light. Seeds of the raspberry which have been buried 1600 years, thirty feet deep, have been known to germinate and grow.

How mysterious is the agency of light, at first serving to keep the vital principle dormant, but when it has once burst into activity, becoming so essential to the growth and beauty of the plant. The power and goodness of God are magnificently displayed in this element. As we look out on the landscape, lighted up by the glorious orb of day, and relieved by the various shades of verdure; as the eye wanders over hill and valley, mountain and plain, streamlet and lake, or as we gaze with admiration on the blue vault above—the summer clouds, or the stupendous arch of varied light which so frequently spans the heavens as the rainbow—how can we refrain from bowing down with grateful adoration before the Being, who has, by the creation of this one simple element, contributed so wonderfully to the happiness of his creatures, and saved them from the horror of groping in perpetual darkness. And how excellently does the divine goodness and wisdom shine out, in constituting this light, of seven different colours, as it is exhibited in the rainbow, or separated by a prism. Different objects absorbing different rays, and reflecting others, produce an endless diversity of shades, and we are charmed with the varied and gorgeous hues of creation.

“Look upon the rainbow and praise him that made it; very beautiful it is in the brightness thereof; it compasseth the heavens about with a glorious circle, and the hands of the Most High bended it.”—*Vermont Agriculturist*.

THE FLOWER GARDEN.—The first point to be remembered in making a garden is, that ugliness is unknown among plants. Every thing created is beautiful when in its most perfect state, but it may be rendered ugly by mismanagement or by unavoidable accidents. There is not a weed in our fields which is not at some time of its life beautiful in one way or other, if in the most perfect health. Those which have the gayest flowers may have the poorest foliage, while, on the other hand, the most exquisitely beautiful leaves may be, and generally are, associated with unattractive flowers. But a garden must be beautiful in every possible way, and the grand mistake which half the English commit consists in ransacking the world for mere gaudy flowers. How great an error is this the Pelargoniums

abundantly prove, for scarlets, with the worst of all foliage, are exclusively employed in flower gardens, while the charming foliage of *Radula*, *quercifolium*, *graveolens*, *balsameum*, and their allies, is entirely overlooked, except by those who stand above the crowd.

Beauty in plants is dependant upon skilful cultivation, and it is because good gardening is not thought of, that most of our old favourite and herbaceous plants have fallen into neglect. Because they would remain alive without care, therefore they received none, their owners forgetting that what a plant would live upon is not precisely what it would thrive upon. Bad gardeners drew a ring in the ground with their forefingers, poured into the ring the contents of a packet of brown paper marked *Dalphinium Ajacis*, scratched the earth into the ring by the aid of a second finger, and called it sowing seeds. The plants sprang up, crowded each other to death, and what remained, a circle of poor, famished, jaundiced wretches, represented the noble family of *Ajax*. Had the plants been permitted to breathe and feed, and spread their branches, and nourish their brilliant flowers, they would have proved themselves worthy of the mighty name they bore. This was the way with all annuals, and hence the cultivation of annuals has almost ceased in fashionable gardens. What should have been done was to treat each separate plant with the same care that would be bestowed upon a pet *Geranium*; not that it would have needed as much, but to have given it all the care it wanted; then, indeed, its beauties would have become manifest, and it would have maintained its rank securely in the history of horticulture. He who doubts this should take a plant of *Hemlock*, put it in a garden, in rich soil, shelter it from winds, and give it ample room to expand; and he will find, probably to his great surprise, that it can scarcely be matched for admirable beauty. Beauty, then, is an affair of cultivation; and depends less upon a plant than on its master.

The season is not yet advanced enough to form an old-fashioned flower-garden; which is best done in the summer, so as to be ready for filling in the autumn and succeeding spring; but this is the very time to set about determining what to put into it when ready. Instead, therefore, of crowding our columns with long and useless lists of plants to be commended—which, after all, may not suit our inquirers' pockets, means, taste, or climate—we recommend the following course to be pursued. Go to the seedsmen and buy as many of their cheap packets of annuals as you can afford; go to the nurserymen for as many of their commonest herbaceous plants as it may suit your convenience to grow. Cultivate these skilfully through the summer; note all that you want to know about them—size, colour, season, duration, &c.; and then when the season comes for stocking your garden, you will have ten times better information in your possession than all the advice in the world can supply you with. Above all things, you will have learned what best suits your means, wants, and taste.—*Gardeners' Chronicle*.

DOMESTIC EDUCATION.—The time is coming, when domestic duties are expected to be performed upon scientific principles; and we are bound to employ every means in our power to make ourselves acquainted with the sciences pertaining to our domestic affairs. A knowledge of chemistry and dietetics, in a cook, is invaluable to a family. Information regarding the laws of health, and life, and mental philosophy, is absolutely necessary to the proper rearing of children. The suffering I have seen and experienced for want of knowledge, and the almost incredible advantage gained by the application of a few practical ideas, makes me very desirous for others, as well as myself, that we should have “more light.”

I think, however, it is not proper that we should always be in performance of the sober duties of life. Nature does not bestow all her care on the sturdy oak and mountain pine, but adorns the landscape with an endless variety of fanciful colors and forms, enlivens the whole music, and the frolicsome play of animated beings. Nor did she fail to implant in the human mind faculties harmonizing with the beauty, melody, and gaiety of external nature, which find a legitimate sphere of action in ornamental horticulture, vocal and instrumental music, &c.

AMANDA.

FEMALE CULTURE.—The great entertainments of all ages are reading, conversation and thought. If our existence after middle life is not enriched by these, it becomes meagre and dull, indeed—and these will prove sources of pleasure just in proportion to the previous intellectual culture. How is that mind to have subject matter of pleasurable thought during its solitary hours, which has no knowledge of the treasures of literature and science, which has made no extensive acquaintance with the distant and the past? And what is conversation between those who know nothing? But on the other hand, what delight is that mind able to receive and impart, which is able to discuss any topic that comes up, with accuracy, copiousness, eloquence and beauty? The woman who possesses this power can never fail to render herself agreeable and useful in any circle into which she may be thrown, and when she is so, she cannot fail to be happy. A full mind, a large heart, an eloquent tongue, are among the most precious of human things. The young forsake their sports and gather round, the old draw nigh to hear, and all involuntarily bow down to the supremacy of mind. These endowments add brilliancy to youth and beauty, and when all other charms are departed, they make old age sacred, venerable, beloved.

WASHING CLOTHES.—We publish to-day, for the benefit of the ladies, the greatest recipe for washing clothes ever yet published. By this process one hand can do as much as three hands in the old method, and do it much better. Be sure to keep this recipe. If you file our paper, mark round the recipe with pen and ink; if not, cut out the recipe and file it away.

RECIPE.—Take good home-made soft soap, 4 lbs.; borax refined, 4 oz.; common salt, 3 oz.; water seven pints. Boil slowly to cake soap; separate the top from the sediment for the cake soap. The bottom or sediment will do for washing dishes and such like.

PROCESS.—1. Wet the clothes thoroughly. 2. Rub the dirty and greasy spots with some of the soap. 3. Boil the clothes in strong soap suds of the above soap. 4. Rinse the clothes three times well in clean water.
—*Exchange paper.*

MUSIC OF INSECTS.—A sound like the humming of bees is often heard in lonely rural retreats, among mossy dells and leafy solitudes; the poet heard this music of the groves as he penned the following couplet:

"Not undelightful is the ceaseless hum,
To him who, musing, walks at noon."

Sounds like the humming of bees are frequently heard, though not a single insect is to be seen. The existence of these diminutive creatures,—who only appear in the evening,—is said to terminate before the dawn of day; though short, it is a life of incessant pleasure. By naturalists they are now classed as coral flies, who congregate in millions, as Gardner supposes, for the pleasures of music and the dance.

It is related of Beethoven that those imitative sounds in his celebrated Pastoral Symphony were caught from na-

ture; that he employed the violin, in that extraordinary composition, to represent the soft, fluttering stir of the insects,—the hum in a noontide warmth of a summer's day. He used to sit upon a stile in the environs of Vienna, a lovely, sequestered spot, and listen to the ceaseless sound of unnumbered winged insects dancing in the air.

Plutarch tells us that when Terpander was playing upon the lyre, at the Olympic games, and had enraptured his audience to the highest pitch of enthusiasm, a string of his lyre broke, and a grasshopper immediately perched on the bridge, and by its voice supplied the loss of the string, and saved the fame of the musician.

The Athenians kept those delicate creatures in cages for the sake of their song, and called them the nightingales of the nymphs. As in the case of birds, the males only sing.

SUGGESTIONS ON HEALTH.—Children should be taught to use the left hand as well and as much as the right.

Infants should be sponged with cold water every day. Infants should be carried into the air every day of the season. Infants should be nursed at regular intervals, once in about three hours. From the time they are weaned, until they have passed the first dentition, children should be fed on bread and milk.

Coarse bread is better for children than fine.

Children should sleep in separate beds, and, where it is practicable, in separate rooms, and should not wear night-caps.

Children under seven years of age should not be confined over six or seven hours in the house—and that time should be broken by frequent recesses.

From the time of the first, to that of the second dentition, children should be denied animal food.

Children and young people must be made to hold their heads up and shoulders back, while standing, sitting or walking. The best beds for children are of hair, or, in winter, of hair and cotton.

At proper times, and in proper places, children should be indulged in the free use of their limbs and lungs. A play-room is a useful appendage to a house.

After the second dentition is passed, young people may eat all kinds of wholesome food. Young children should drink only water. One pint of liquid to a person a day, is sufficient for health; and that should neither be hot nor very cold, and should be taken at some interval after eating.

From one to one pound and a half of solid food is sufficient for a person in the ordinary vocations of business. Persons in sedentary employments should drop one-third of their food and they will escape dyspepsia.

Young persons should walk at least two hours a day in the open air.

Young ladies should be prevented from bandaging the chest. The author has known three cases of insanity, terminating in death, which began in this practice.

Every person, great and small, should wash all over in cold water every morning.

Reading aloud is conducive to health.

The more clothing we wear, other things being equal, the less food we need.

Sleeping-rooms should be furnished with a fire-place, or some other mode of ventilation besides the windows.

The proper temperature of sleeping-rooms is from 55 to 60 degrees Fahrenheit.

The temperature of a room warmed by an open fire-place is sufficiently high for health and comfort at 70 degrees Far., but in a room warmed by an air-tight stove, it needs to be at 75 degrees. Air-tight stoves are not good for health unless the room is plentifully supplied with cracks and crevices.

Young people and others cannot read and study much by lamp-light with impunity.

The best remedy for eyes weakened by night use, is a fine stream of cold water frequently applied to them.

When eyes fail by age, the aid of spectacles should be called in, instead of being deferred as long as possible.—*Dr. Warren's Tract on Health.*

MAXIMS OF ORDER AND NEATNESS.

1. Perform every operation in proper season.
2. Perform every operation in the best manner.
3. Complete every part of an operation as you proceed.
4. Finish one job before you begin another.
5. Leave your work and tools in an orderly manner.
6. Clean every tool when you leave off work.
7. Return every tool and implement to its place at night.

THE WAY DOMESTIC ANIMALS COLLECT THEIR FOOD.—The horse, when feeding on natural herbage, grasps the blades with his lips, by which it is conducted between the incisors, or front teeth. These he employs for the double purpose of holding and detaching the grass, the latter action being assisted by a twitch of the head. The ox uses the tongue to collect his food. That organ being so directed as to encircle a small bundle of grass, which is placed by it between the incisor teeth and an elastic pad opposite to them in the upper jaw—between these the herbage is pressed and partly cut, its complete severance being effected by tearing. The sheep gathers his food in a similar manner as the horse, but is enabled to bring his cutting teeth much nearer to the roots of the plants, in consequence of the upper lip being partially cleft. For his upper lip is thin, and is susceptible of considerable mobility; while that of the ox is thick, hairless, with a very limited action.

REPORT ON QUARANTINE.—The General Board of Health have just presented to her Majesty a report on quarantine, the main object of which is to show the greater security to the public health which would result from the substitution of sanitary for quarantine regulations. The report proves by statistical and other details that the great epidemics are governed by laws over which quarantine has no controul. In tracing the rise and progress of cholera, for instance, in British America, during the years 1832 and 1834, it is observed that this disease on both occasions advanced with post-like regularity in the same course, attacking the same places on nearly the same corresponding days. The rapidity of the course of great epidemics further shows how vain the attempt must be to stop their progress by such machinery as that of quarantine. In 1847, influenza spread in one day over every part of the metropolis. "It met you everywhere," says the registrar-general; nearly the whole population were affected more or less, and without taking slight instances, not less than 500,000 persons in 2,100,000 suffered in London from the epidemic. In like manner, when cholera broke out in Cairo, in 1831, it spread within the space of five days over the whole of Lower Egypt, infecting at the same time all the towns and villages of the Delta. In 1832 it leaped at one bound from London to Paris, and out of the 48 quarters of that city it spread in five days over 25. What conceivable influence, it is asked, can quarantine or sanitary cordons exert in checking the progress of disease possessed of such powers of diffusion? After entering into a minute investigation of questions of plague, the sanitary condition of the merchant ships of Great Britain, and the actual mortality among merchant seamen, as presented by the marine register; and presenting an exposition of the principle of legislation

recommended, namely, that of concentrating responsibility on those who have a direct interest in prevention, and who possess the best means of securing it, the report concludes as follows:

"Having carefully examined what appeared to be the best available evidence as to the facts on which the system of quarantine rests, having considered the report made to the Royal Academy of Medicine in France, and the written testimony of the most eminent professional and scientific observers and writers, as well in Austria and America as in England, we have now to report as our conclusions:—1. That the chief pestilence in respect to which quarantine establishments have been kept up in this country, the Oriental plague, is, in its antecedent circumstances or causes, in the localities, classes, and conditions of the population attacked, and, in its rise and progress, a disease of the same essential character as typhus, being according to the most recent authorities who have had practical experience of the malady, a form of that disease modified and rendered more intense by peculiarities of climate and of social condition. 2. That the notion of the propagation of the plague by means of goods appears from one uniform mass of evidence to be as entirely unfounded as the opinion which formerly prevailed in this country that typhus could be propagated in the same mode. 3. That the true danger of the propagation of plague is not by contact of the affected with the healthy, but by exposure on the part of susceptible subjects to an infected atmosphere, under the like conditions which are known to produce and propagate typhus fever in this country. 4. That the quarantine establishments in this country, and every other of which we have information, are wholly insufficient, even on the assumption on which they have hitherto been maintained, to prevent the introduction and spread of epidemic disease. 5. That these establishments are of a character to inflict on passengers extreme and unnecessary inconvenience, and to subject such of them as may be sick to increased suffering and danger, while they maintain false securities in relation to the means of preventing the spread of disease. 6. That typhus and other dangerous epidemic diseases are frequent on board merchant seamen vessels at sea and in port, for which no effectual or suitable provision is at present made. 7. That, as far as relates to the cases of epidemic diseases generated at sea, the principle of the concentrating of responsibility on the shippers, in making it their pecuniary interest to complete the voyage with healthy passengers, operates most effectually in the cases where it has been applied, such as to emigrant, transport, and convict ships, and should be extended to all cases; and that in respect to ships in port, the regulations applied to the prevention of the spread of epidemic diseases from houses in towns are applicable, and would practically be highly beneficial. 8. That the substitution of general sanitary regulations to ships in port, for the existing quarantine regulations, would far more effectually extinguish epidemic disease and afford better protection to the uninfected on shipboard, whilst it would relieve passengers and crews from grievous inconvenience, abate the motives to concealment of sickness and to false representations as to its nature, greatly lessen commercial expenses, and remove obstructions to the free transit of goods and uninfected persons which the existing system of quarantine occasions. 9. It follows that we propose the entire discontinuance of the existing quarantine establishments in this country, and the substitution of sanitary regulations. 10. By such substitution the most effectual security which the present state of knowledge affords would be taken against the importation of foreign contagion, the maintenance of infection, and the origin and spread of epidemic disease." The report is signed by Lord Carlisle, Lord Ashley, Mr. Edwin Chadwick, and Dr. Southwood Smith.

Editors' Notices, &c.

W. W., Hope.—The answer to your note should have been given in our last number, but was over-looked. As you did not pay us for the paper, and as we only get paid for one copy to your address, you must look to the person to whom you paid your money.

TO AGRICULTURAL SOCIETIES.—We shall be much obliged to those Agricultural Societies in arrears for the *Agriculturist*, if they will remit us the amount of our claims. We understand that the government allowance has been received, which will enable them to comply with our request without inconvenience.

ADELAIDE ACADEMY.—We refer our readers to the advertisement of Mr. Hurlburt, in our present number. Parents desirous of giving their daughters the benefit of competent teachers in every branch of education, should avail themselves of the superior advantages afforded at this institution.

HARVEST, CROPS, &c.

The wheat harvest in this part of the province is nearly over, and the yield may be said to be above an average. The grain is remarkably plump, and has been secured in good order. We have heard complaints of rust, but it appeared so late that except in the case of late crops little harm has been done by it. The spring crops will be light. Hay has been a good crop on low grounds, but on up-lands it has been light also. We give below a few extracts from the newspapers in different parts of the province. In the eastern section the accounts are not the most promising.

The wheat is being generally cut in this neighborhood. The fall wheat is remarkably heady, and is expected to give a great yield. In some places there is rust, but nothing of consequence. The rust must have been induced by too long drought, producing dew, as the rains came too late, besides the weather was cool after them. Oats, peas, and barley will suffer from the want of rain; but still there will, it is supposed, be an average crop. There has been a greater quantity of Indian corn planted this year, and it promises a good return. In fact, the hot weather has just been the thing for it. Potatoes are expected to be an abundant crop. The hay is nearly all cut, and the produce surpasses the calculations of the most sanguine.—*Hamilton Journal and Express*.

The fall wheat in this country looks well, and harvesting has already commenced. The spring crops have suffered from want of rain. In some cases the farmers have ploughed it up. Hay is good and abundant and is housed.—*Port Hope Advocate*.

The wheat harvest is proceeding in this township and in Waterloo, with alacrity, but will not be general till the beginning of next week; the crops are very abundant. An intelligent friend, himself a farmer and miller, has traversed the country from Goderich to Galt, and gives us his opinion as follows: the fall wheat is an average crop generally, and there is three or four times more sown this year than was ever before put in the ground, in the Huron District: the

spring crops are light and healthy. Rust has appeared in very many places, but seems chiefly confined to the straw. The potatoe crop appears healthy, and, as yet, free from any appearance of disease.—*Galt Reporter*.

FIRE IN WOODS.—CROPS.—The weather continues dry, and fires are raging in the woods all around us, and considerable damage has been done. On the American side of the river the fire has made sad havoc, burning in some instances, houses, barns, fences, &c. The cutting of hay has commenced in this vicinity, and the crop, although somewhat better than that of last year, is much below an average one. Unless rain fall soon, the spring grains will totally fail.—*Prescott Telegraph*.

FIRE IN THE WOODS.—During the late hot weather, the woods all around have been on fire, and in some instances great damage has been done to fields of grain. In some instances we have heard of the destruction of houses, barns, stock, and even loss of human life. We have been informed that M'Cracken's Saw Mills, in Finch, have been burnt down, together with a quantity of lumber. Also the houses of Mr. Cockburn and Mr. Thompson have been consumed. We are told that the fires in the woods have also made sad havoc on the other side of the river. It was reported in town last Saturday, on good authority, that the house and buildings of a farmer near Fort Covington, had been burnt to the ground, and sad to say, four of his children had perished in the flames. The rain of Friday night, however, which happily extended over a large tract of country, checked the progress of the flames, and in some places extinguished the fires altogether. But should rain not fall soon, the smouldering fire will again burst forth into flame.—*Cornwall Freeholder*.

TORONTO MARKET.

	July 31, 1849.			
	s.	d.	s.	d.
Flour, per brl. 196lbs. - - - -	17	6	to	21 3
Wheat, per bushel, 60lbs. - - - -	3	6	to	4 0
Barley, per bushel, 48lbs. - - - -	1	6	to	1 9
Rye, per bushel, 56lbs. - - - -	2	6	to	3 2
Oats, per bushel, 34lbs. - - - -	1	0	to	1 3
Oatmeal, per bbl. 196lbs. - - - -	15	0	to	18 0
Pease, per bushel, 60lbs. - - - -	1	4	to	1 8
Potatoes, per bushel - - - -	2	6	to	4 0
Onions - - - -	3	6	to	5 0
Beef, per lb. - - - -	0	2	to	0 4
Beef, per 100lbs. - - - -	15	0	to	20 0
Veal, per lb. by the quarter - - - -	0	2½	to	0 3
Pork, per lb. - - - -	0	2½	to	0 3½
Timothy, per bushel, 60 lbs. - - - -	6	0	to	8 0
Turkies, each - - - -	1	3	to	3 9
Geese, each - - - -	1	3	to	2 6
Ducks, per couple - - - -	1	0	to	1 6
Chickens, per couple - - - -	1	6	to	1 9
Ham, per 100 lb. - - - -	27	6	to	40 0
Bacon per 100 lbs. - - - -	36	0	to	37 6
Mutton, per lb. - - - -	0	2½	to	0 3½
Mutton, per lb., by the quarter - - - -	0	2½	to	0 4
Lamb per quarter - - - -	2	0	to	3 0
Fresh Butter, per lb. - - - -	0	6½	to	0 8½
Firkin Butter, per lb. - - - -	0	5	to	0 6
Cheese, per lb. - - - -	0	3	to	0 5
Lard, per lb. - - - -	0	4	to	0 4½
Apples, per barrel, - - - -	10	6	to	15 6
Eggs, per dozen, - - - -	0	6	to	0 7
Fowls, per pair - - - -	1	5	to	1 10
Straw, per ton, - - - -	30	0	to	37 6
Hay, per ton, - - - -	30	0	to	37 6
Fire Wood - - - -	10	0	to	12 6

Advertisements.

PROSPECTUS.

THE PROVINCIAL MUTUAL AND GENERAL INSURANCE COMPANY.

INCORPORATED BY ACT OF PARLIAMENT.

BOARD OF DIRECTORS.

ROBERT E. BURNS, Esq., *President.*

J. S. HOWARD, Esq., *Vice-President.*

W. L. PERRIN, RICHARD C. GAPPER,

WM. GOODERHAM, JAMES BROWN,

JOHN G. BOWES, FRANCIS NEAL,

A. A. CLARK, J. C. MORRISON, M. P. P.,
and CHARLES BERCZY, Esquires.

THE Stock of this Company is divided into the Mutual and Proprietary—the Mutual by the members giving premium notes upon obtaining Policies, and the Proprietary by having a subscribed Capital and issuing thereupon in the ordinary way.

THE MUTUAL BRANCH.

It has been felt throughout the Province, that Mutual Insurances have not been sufficiently restricted to render the system a favorite with the public; but this may be said to arise from the operations of the different companies being confined to each particular District. It is evident that these restrictions operate badly; for if it be desired to have nothing but equal risks, then the transactions must necessarily be limited to an amount which makes it unprofitable to become Policy-holders; and if it is desired to increase the business by taking unequal risks with others, then members are exposed to pay more than they would be required to do in other Companies.

If Mutual Insurances are taken upon property classed as extra hazardous with those termed not hazardous, although higher rates are put upon the former with a view to equalize them, it is obvious it has not such effect. This may be fully established by simply putting a class together, as for instance all the Mills of the Province, and ask whether such class would be desirous of mutually insuring each other, or whether they would not rather be joined with a goodly sprinkling of farmers as members. Again, ask the farmers and others of similar risks, whether they would not be willing mutually to insure each other without being obliged to pay for losses on extra hazardous property, and there can be no doubt what the answer would be.

The object of this Company is to equalize the risks so as to make it certain to policy-holders, that by insuring with this Company, they will not be called upon to pay such high rates as in other Companies. The Act of Parliament provides that no one risk shall exceed £500, and no insurance shall be effected on buildings and other property situated in blocks or exposed parts of Towns or Villages, nor on any kind of Mills, carpenters' or other shops, which by reason of the trade or business followed are rendered extra hazardous, machinery, breweries, distilleries, tanneries or other property involved in similar or equal hazard. It is expected to obtain nothing but the best description of risks, which in fact this Company is confined to by the charter; and as their operations will extend over the whole Province, and will thereby unite a most powerful and wealthy class, it affords to the public a security hitherto not attainable in this Province.

The principle now adopted by this Company has been acted upon in the United States for some years, and in consequence people have insured with the United States Companies to a very great extent. It is not, however, too late yet to prevent a great deal more money from leaving us, and if we are desirous to keep our means among ourselves, an opportunity is now afforded to every farmer and other person wishing to insure upon equal risks only, to do so upon the terms of knowing that he never can be called on to pay except for losses sustained upon property of equal risk with his own.

Agents of this Company will be named in all convenient localities; and the advantage of having an institution with all its officers under the supervision of the members themselves, and under the controul of their own laws, require no comment.

The rates have been placed upon the most favourable terms, and as low as can possibly be obtained in any Company whatever. For instance, the second class embracing the ordinary farm buildings and produce of the country, are fixed at one per cent. of the insured value, that is, if £500 be insured, the premium note will be £5 and the payment thereon £1 13s. 4d., with 7s. 6d. for the Policy and Survey—in all £2 0s. 10d.—which is the whole probable amount for five years' insurance, the future liability being in no case beyond the £5 for the whole five years.

Every facility will be afforded to persons wishing to insure, and if loss should happen, it will be found that the by-laws amply provide for the Insured.

The Directors are confident that they are now placing before the public, the means of effecting Insurances on property on more favourable terms, considering all things, than can be obtained elsewhere.

Applications may be made to the agents, or at the office of the Company, where every information will be afforded.

THE PROPRIETARY BRANCH.

The Capital is £100,000, divided into shares of £20 each, upon which five per cent. is required to be paid at the time of subscribing.

The Company is authorised to take Fire and Marine risks, and also to effect assurance on lives, and to grant annuities.

The Agents of the Company will be authorised to obtain subscriptions for stock; and as soon as a sufficient amount is obtained the Company will be prepared to take Fire and Marine risks.

It is well known to Merchants and others, that a large amount is paid annually to Foreign Companies, simply because the Insurance Companies established in the Province are not sufficient for the business. It cannot be supposed that the foreign companies would continue business in this Province if they did not find it profitable, and that circumstance abundantly affords proof, that there is room for another company, upon remunerative terms to the shareholders.

The Company is not confined in their Marine risks to the lakes and rivers of this Province, but has authority to insure upon the ocean as well.—This authority may afford to the merchant an easy mode of effecting insurance upon property at their own doors.

So soon as it can conveniently be done, it is the intention of the Directors to bring into operation the branch authorising the effecting of Life Insurances, and granting annuities. It has been stated that upwards of £10,000 a year is remitted to Britain for life insurance—this might be saved by proper attention to the subject. The large Capitals accumulated by the

Life Insurance Companies in Britain, prove them to be proper, and the best and most sure means of saving and making provision for families.

The Directors appeal to the public to consider the advantages thus offered by this Company, in uniting under one management, and at one expense, all the different branches of Insurance—and they confidently expect that they will not be mistaken in such appeal.

LIST OF AGENTS ALREADY APPOINTED.

Montreal.—C. BOCKUS, Esq.
 Gananoque.—W. T. MACDONALD.
 Kingston.—M. DRUMMOND, Esq.
 Prescott.—W. PATRICK.
 Peterboro'.—J. HALL.
 Belleville.—F. McANANANY, Esq.
 Oshawa.—S. B. FAIRBANKS, Esq.
 Scarboro'.—Mr. C. C. BOWEN.
 Sharon.—Mr. I. C. HOGABOOM,
 Bradford.—Mr. T. McCONCHY.
 Weston.—J. A. MACDONALD.
 Hamilton.—Mr. JOSIAS BRAY.
 St. Catherine's.—A. K. BOOMER, Esq.
 London.—W. BUCHANAN, Esq.
 Drummondville.—R. R. HUBBARD.
 Stratford.—J. W. DALY, Esq.
 Goderich.—J. CLARK, Esq.
 Travelling Agent—MR. T. RYALL.

Toronto, July 25, 1849.

ADELAIDE ACADEMY,
 FOR THE EDUCATION OF YOUNG LADIES.

No. 28, Bay Street,
 TORONTO.

THE next Session of Adelaide Academy will commence on the 1st September, with Lectures on Chemistry and Astronomy.

Pupils are received at any time during the year, except from the 1st of July to the 24th of August.

Competent and experienced teachers are engaged to give instruction in all the solid branches of an English Education, in Instrumental and Vocal Music, Drawing, Painting in Water Colours, Oil Painting, Miniature Painting, &c.

Lectures will be given to the classes in Natural Philosophy, Chemistry, Astronomy, Physiology, and Biblical History.

The Academy is divided into four departments, with experienced Teachers over each.

Board	£0 10 0	per Week.
Tuition in English Studies.....	1 0 0	“ Qr..
Board & Tuition in English Studies	26 0 0	“ Ann.

Pupils attend the Church which their Parents or Guardians direct.

REFERENCE

Is politely permitted to—

The Honourable The Chief Justice,
 The Honourable Robert Baldwin.
 The Honourable J. H. Price.
 Henry Ruttan, Esq., Sheriff N. D.
 W. B. Jarvis, Esq., Sheriff H. D.
 W. S. Conger, Esq., Sheriff C. D.
 Rev. Dr. Richey, Rev. E. Wood, Superintendent of Missions; Rev. H. Esson, A. M., Professor in Knox's College; and to numerous Patrons throughout the country.

☞ Cards, giving particulars, can be obtained at this office, or at the Academy.

J. HURLBURT, A. M., Principal.

Toronto, 26th July, 1849.

NEW CARRIAGE FACTORY.

WILLIAMS & HOLMES,

HAVE REMOVED their *City Carriage Repository* to 142, Yonge Street, where they have commenced a Manufactory in all its branches. Parties wishing to purchase for Private or Public Business, are requested to give them a call before purchasing elsewhere, as their facilities are such as to enable them to manufacture cheaper than any other Establishment in Toronto.

Toronto, January 1, 1849. 1-tf

N.B.—The public are respectfully invited to an inspection of their Lumber and other Building Materials, as none but the very best will be used.

MAMMOTH HOUSE,

Removed to the Store next door South of Mr. Elgie's Tavern, Market Square.

THOMAS THOMPSON is happy to inform the Public, that, by the praiseworthy exertions of his friends, he has saved from the destructive *Conflagration of 7th April*, staple and fancy DRY GOODS, GENERAL CLOTHING, HATS, CAPS, BOOTS, SHOES, &c. &c., to the amount of upwards of \$15,000! partially damaged, which will be sold at a great sacrifice. The above Stock, with the early *Spring Arrivals* now opening out, will comprise a splendid assortment of *cheap and fashionable* Goods, the whole of which he is determined to have cleared out previous to his re-opening the new Mammoth House.

Toronto, 17th April, 1849.

PHŒNIX FOUNDRY,

No. 58, YONGE STREET, TORONTO.

GEORGE B. SPENCER,

(LATE C. ELLIOT.)

CONTINUES every Branch in the above Establishment, as heretofore; and, in addition, keeps constantly on hand a good assortment of Cooking, Parlor, Box, and Air-Tight Stoves, of the most approved patterns.

Also, a Second-hand Engine, with or without the Boiler, Twelve-horse Power, will be sold very cheap for Cash or short payment.

Toronto, Jan. 26, 1849. 1-tf

STOVES! STOVES!! STOVES!!!

J. R. ARMSTRONG,

CITY FOUNDRY,

No. 116, Yonge Street, Toronto,

HAS constantly on hand Cooking, Box, Parlour and Coal Stoves, of various patterns and sizes, *very cheap for cash.*

Also, a New Pattern Hot-air Cooking Stove, just received, taking three-feet wood, better adapted for the country than the Burr, or any other Stove now in use. It has taken the First Premium at every Fair in the United States, where it has been exhibited.

Ploughs, Sugar Kettles, Grist & Saw-Mill Castings, Steam Engines, Sleigh Shoes, Dog Irons, and a general assortment of Castings.

ROWSELL AND THOMPSON, PRINTERS, TORONTO.

CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. v. 9.

GEORGE BUCKLAND, }
WILLIAM McDUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, SEPTEMBER 1, 1849.

No. 9.

The Canadian Agriculturist,

A MONTHLY JOURNAL OF AGRICULTURE, HORTICULTURE, MECHANICAL AND GENERAL SCIENCE. DOMESTIC ECONOMY & MISCELLANEOUS INTELLIGENCE: Published by the Proprietors, W. McDUGALL and GEO. BUCKLAND, on the first of each month, at their Office, near the South-west corner of King and Yonge Streets, Toronto.

Subscription ONE DOLLAR, in advance. Advertisements 4d. per line each insertion.

Societies, Clubs, or local Agents ordering twelve copies and upwards, will be supplied at 3s. 9d. per copy.

Money, enclosed in a letter, and addressed to the "Editors of the Agriculturist, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, need not wait to be called upon.

Payment in advance being the only system that will answer for a publication so cheap as ours, we shall send the remainder of the volume to none but those who order and pay for it.

LOCAL AGENTS.—Any person may act as local agent. We hope that all those who have heretofore acted as such will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending four subscriptions. Those sending twelve and upwards will be supplied at 3s. 9d. per copy.

MESSRS. DENISON & DEWSON, Attorneys,
&c., New Market Buildings, Toronto.
January 26, 1849.

2

TORONTO NURSERY.

FOR SALE, an extensive collection of FRUIT TREES, consisting of all the choicest sorts of Apples, Pears, Plums, Cherries, Peaches, Grape Vines, Raspberries, Gooseberries, Strawberries, Currants, Asparagus, and Rhubarb Root, &c.

Also, Ornamental Trees, Flowering Shrubs, Hardy Roses, Herbaceous Flowering Plants, &c., in great variety.

Descriptive Catalogues, containing directions for transplanting, furnished gratis to post-paid applicants.

GEORGE LESLIE.

March, 1849.

4

CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash Prices for 1000 bushels clean Timothy Seed; 100 bushels clean Spring Tares; 100 bushels White Marrowfat Pea and 25 bushels Flax Seed.

JAMES FLEMING,

Seedsman and Florist.

Yonge Street,
Toronto, Jan. 1, 1849.

1

WM. McDUGALL,
ATTORNEY, SOLICITOR, &c.,

South West Corner of
KING AND YONGE STREETS,
TORONTO.

Deeds, Mortgages, and other Legal Instruments promptly prepared.

We insert, for the full information of our readers, the following Programme of the Provincial Agricultural Show, to be held in Kingston in September next, as published by the Committee of Management:

GRAND PROVINCIAL AGRICULTURAL FAIR AND CATTLE SHOW,

TO BE HOLDEN AT KINGSTON, C. W.,

On September 18th, 19th, 20th, and 21st, 1849.

THERE will be expended in Premiums, in the various branches of Agricultural and Horticultural Productions, Implements of Husbandry, Manufactures, Mechanical Inventions, Fine Arts, &c. &c. the sum of from TWELVE TO FIFTEEN HUNDRED POUNDS, the particulars of which and Premium Lists (which will be liberal) will be prepared and made known as early as possible.

The ground selected for the Show is delightfully situated, and commanding a splendid view of the River St. Lawrence and Lake Scenery. Persons desirous of competing at the Show must become Members of the Association, which they can do by paying 5s. per annum, or \$10, which constitutes Membership for Life.

Members will have the right of entering for Competition *Three Articles free of charge* (all Entries over that number 74d. each), and will be furnished with a Badge, which will entitle them to a Free Entry to the Show Grounds.

FIRST DAY.

All Entries to be made with the Secretary, at not later than 8 P. M. of the 18th, at which hour the Lists will be closed. Separate Lists of Premiums provided for Articles and Animals not the production of Upper Canada.

SECOND DAY.

The Judges, Competitors, and Officers of the Society only will be permitted to enter the Show Grounds until 2 P. M., after which hour the public will be admitted. At 7 o'clock, P. M., an AGRICULTURAL LECTURE AND DISCUSSION will be held in the Court House, to which the Public are invited.

THIRD DAY.

The Show Grounds will again be opened to the public, and at 3 P. M. the President will deliver the ANNUAL ADDRESS, after which the Premiums will be declared. The city authorities have kindly given the use of the City Hall for a PUBLIC DINNER in the Evening.

FOURTH DAY.

The Trial of Ploughs. A Ploughing Match will take place in the morning, and at noon the Prize Stock and Articles will be Exhibited on the Show Grounds, after which the PREMIUMS will be paid.

No Premiums will be paid on Stock or Implements, &c., leaving the grounds previous to this, without permission from the President.

THE WHOLE WILL BE WOUND UP WITH A

GRAND PROVINCIAL REGATTA,

At the close of the Show, open to all Competitors.

Ample accommodation will be provided for Visitors, and pledges have been received that the ordinary rates only will be charged at the principal Hotels, Taverns, and Boarding Houses, of which there are over one hundred and fifty in the city and immediate vicinity. Spacious Buildings will be erected for the reception of

all articles intended for the Show, and their protection and security suitably provided for; and particular attention will be given to the LADIES' DEPARTMENT.

The Executive Committee will meet on the Show Ground, on Wednesday, the Second Day, at 10 o'clock, when the Judges are requested to attend, as on that occasion all vacancies will be filled. Members of the Society are requested to call, on their arrival, at the Secretary's Office, and receive their Badges. Entries may be made at any time previous to the Show, with the Secretary, GEORGE A. CUMMING, Esquire, care being taken by the parties to make the entries in the owner's name, which will prevent confusion in calling over the premium lists for payment.

Arrangements are about being made with the respective Steamboat Owners, for the Transit of Stock, &c., intended for the Show, at moderate charges, and application made to the proper authorities to have Animals and Articles of American production, intended for competition at the Show, admitted Free of Duty.

Kingston, June 30, 1849.

7

TO BRICK MAKERS.

AN excellent opportunity offers itself for the purchase of an improved BRICK MOULDING MACHINE, with horse power, capable of Moulding from 20 to 30,000 Bricks per day.

ALSO:

TWO CLAY TEMPERING MACHINES, on a new principle, each Machine can temper a bed of clay, at one time, sufficient for 12,000 Bricks.

Apply (if by letter, *post-paid*.) to

ROBT. BEEKMAN, AGENT,
No. 6 Wellington Buildings.

Toronto, 6th September, 1849. 9-tt.

PROSPECTUS

OF A

WORK ON EDUCATION;

OR

An Address to the Mothers of Canada on the Education of their Daughters,

BY MRS. HURLBURT,

PRECEPTRESS OF ADELAIDE ACADEMY.

THIS work treats of the moral, religious, intellectual and physical training of Girls; dwells particularly upon the nature and great importance of an early religious education; the practical duties of Christians in the family circle, in social and public life; the prevailing systems of education, their excellences and defects; the choice of teachers, their religious and moral character; the subjects of study of most importance for Girls; their early associates, prevailing amusements; reading, choice of books, pernicious effects of novel reading; duties of mothers, duties of daughters; domestic or fireside education, private schools, public seminaries; examples of pious and distinguished women.

Nearly one-third of the work is devoted to the religious education of Girls, showing its influence upon the happiness and prosperity of families and communities. The author believing that this part of education is too much neglected, where it can most efficiently be attended to—at the fireside—has been induced to extend her remarks upon this part of the subject.

This work will contain about 200 pages 12mo, and will be delivered to subscribers at the low price of 2s. 6d. per volume.

Toronto, 8th March, 1849.

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T H E

CANADIAN AGRICULTURIST.

VOL. I.

TORONTO, SEPTEMBER 1, 1849.

No. 9.

PROVINCIAL AGRICULTURAL ASSOCIATION.

The time for holding the Annual Exhibition of this important Society being close at hand, we again call the attention of our readers to the subject. We are assured that the Executive Committee at Kingston are actively engaged in completing the arrangements, and that they are looking forward to the result with much hope and satisfaction. Ample accommodation will be provided both for visitors and stock, and for all other kinds of articles sent for exhibition. The public may therefore depend that proper care will be taken of whatever is entered for competition. A guarantee has been given the Committee, by the various owners of boarding houses and hotels in Kingston and its vicinity, that only ordinary rates for board and lodging shall be charged. We likewise learn that arrangements have been made with the proprietors of the various steamboats on the lake, river and the Bay of Quinte, to convey passengers, stock and all articles intended for exhibition, both to and from the Show, at one half the usual rates.

In the premium list we notice some additions to those of previous years: Ayrshire Cattle are included, also a Foreign Department—which, although necessarily restricted, will be a means of increasing the Exhibition by considerable additions both from Lower Canada and the United States. From the latter, we expect to see a large number of its most distinguished agriculturists and mechanics. The presence of such eminent individuals in the walk of agricultural science as Professor Johnston, of the University of Durham (England), and Professor J. P. Norton, of Yale, Connecticut—both of whom have expressed their intention of attending—will be an additional means of attracting a great number to the Exhibition, which, there is good reason to hope, will this year far exceed anything of the kind that has hitherto taken place in this country.

We understand that the Governor-General intends to honour the Exhibition with his presence; and notwithstanding the political excitement and

differences which unhappily obtain, we should hope that on an occasion like this, his Excellency will be received by the farmers of Canada with the proper respect due to a British Statesman and the Representative of the Sovereign.

We say, then, to the farmers and mechanics of Canada—to all, in short, who feel an interest in the improvement and well-being of their country—Rally round this most valuable institution, and show by your presence and support that you are prepared to take your assigned part in the onward movements of the age. In this noble and patriotic work, we hope to see men of all parties acting in harmony and with zeal; and we are sure that in the present unhappily excited state of the public mind, the opportunity which will be thus afforded of meeting on common ground, for the attainment of a common good, will be eagerly sought after by all who sincerely desire the peace and prosperity of the country. We hope to see the approaching Exhibition graced by the presence of a large number of our fair countrywomen, whose powerful and salutary influence could scarcely be devoted to a more important cause. And we likewise trust that all who take a part in its proceedings, will see the necessity of cultivating and expressing a *kindly and hopeful feeling*, in reference both to the present and future of Canada. As this is, so far as we know, the only Institution we have at all deserving the distinction of being designated national and free from party control, we believe that it may be made, by judicious management, not only conducive to the improvement of the industrial interests of the country, but also to exert a beneficial influence on public feeling and opinion. Bearing in mind, that the destinies of our country are, under Providence, in our own keeping, it behooves every man to cherish a deep and solemn sense of so high a responsibility; and we hope to hear the many hundreds that will gather around the festive board, on the approaching interesting occasion, sing with one heart and voice—**GOD SAVE THE QUEEN.**

EDITORS' NOTES.

On the 24th July, we set out on a tour through the Gore and Wellington Districts, on behalf of the Provincial Association; a few short observations in connection therewith may not be uninteresting to our readers.

It is stated, on another page, that one of the principal improvements now making in the Wellington district is the new macadamized road, in course of construction between Guelph and Dundas; and although the soil on a large portion of this line is not of the best quality, yet much of it appears susceptible of cultivation; and the direct communication thus opened up between Lake Ontario and Guelph, extending northwards till it ultimately reaches Owen's Sound, will be a certain means of increasing the wealth and facilitating the settlement of this large and important district. Good roads may be regarded as ranking among the great civilizers of mankind, and it is pleasing to see the improvements that are going on in this respect in different sections of this province.

We had the pleasure of inspecting a number of farms, many of them well-cultivated and abounding in good stock, particularly in the neighbourhood of Guelph. John Howitt, Esq., so well known as a successful breeder of the pure Durhams, we regret not having the opportunity of seeing, but we saw several fine specimens of his celebrated herd. His three-year-old bull is a remarkable animal, decidedly among the very best we have seen on this side the Atlantic. Mr. Jackson pointed out to us a rich and beautiful piece of land, consisting of some thirty acres, on the banks of the Speed, belonging to Mr. Howitt, which a few years since was a most forbidding cedar swamp. What a metamorphosis does man's industry produce on the roughest and apparently the least promising portions of the earth's surface! How altered will be the appearance of this country when thoroughly subjected to the dominion of man! In the case just instanced, the whole expense of reclaiming, including under-draining, did not, we understand, exceed seven pounds an acre. Although this is an outlay, in the present early history of the country, that cannot be made on a large scale, yet the time will come, in the progress of population and civilization, when many parts of this country will vie with some of the fairest portions of the old world, both in beauty and fertility. Our soil only awaits the skill and labour of man to open up her immense latent resources.

We had the gratification of spending a day with Mr. H. Parsons, near Guelph, and of inspecting his dairy, which Mrs. P. seems to take a delight in conducting on a uniform system, based on correct modern principles. Mr. Parsons' cheese, of the *Stilton* variety, is, as many of our readers well know, from the most gratifying of all tests, that of tasting, of a very superior quality, commanding a high price, and showing beyond all controversy that the soil and climate of many parts of this country are well adapted to the purposes of the dairy. Mr. Parsons keeps a considerable number of pigs, of the small *Sussex* breed, which come early to maturity, and with proper feeding and management produce bacon and hams of a fine grain and of delicious flavour, particularly suited to family use. We afterwards saw the large *Yorkshire* breed, introduced by John Harland, Esq., the intelligent and zealous Secretary of the Wellington Agricultural Society, with whom we had the pleasure of spending several hours on his farm, which would give an old countryman a correct idea of what can be done in Canada. The tall forest, where the land is rich and devoid of pine, is changed in some ten or twelve years into waving corn fields and rich pastures, without the disfigurement of a single stump! Mr. Harland possesses a very fine pure bred *Durham* bull, of large dimensions. Indeed, the stock of this district, as a whole, including both sheep and pigs, is superior to what we have seen any where besides. It is also gratifying to find so many old country farmers giving proofs that they have not forgotten the principles of the agricultural art, as it is practised with such signal success at home.

July 28. We attended a meeting of the directors of the Wellington District Agricultural Society, in Guelph, the president, Colonel Saunders, in the chair. Although the directors did not feel justified in making a grant to the Provincial Association, from the sentiments that had been expressed at a former meeting by several of the members, yet they would exert themselves to procure individual subscribers, and expressed their conviction of the importance and value of the Provincial Association to the country at large, and their best wishes for its continued usefulness and prosperity. The warden, James Wright, Esq., observed that the Provincial Association ought to be regarded in the light of a parent society, the centre, to which all the different agricultural societies in the province should tend, and the depository of all that is worth recording and communicating in relation to the great interests of agriculture and native in-

dustry. Mr. Wright moved and Mr. Greet seconded the following resolution, which was carried unanimously :

"That it is the opinion of the directors assembled this day, that the Provincial Association is capable of affording considerable information to the several agricultural societies in the province, as well as to contribute to the improvement of stock and the cultivation of the soil; and therefore they highly approve of the formation of the said society, and hope that at a future period the Wellington District Society will be induced to aid the Provincial Association in sustaining its valuable and important operations."

July 30. We had the pleasure of observing the extensive farming operations of David Christie, Esq., of Dumfries. It was indeed a gratifying spectacle to witness, at this busy season of the year, fields varying in size from fifty to one and two hundred acres each, waving with the golden grain, promising a return of 25 to upwards of 30 bushels of wheat per acre; land almost without a stump, beautifully undulating, of a free texture, yet possessing naturally a happy combination of all the essential elements of a fertile soil. In looking at Mr. Christie's extensive improvements, we were reminded that some dozen years ago those beautiful and productive fields were a part of the unbroken forest! Now, the country all around is well settled with an industrious and prosperous population, and forms the greatest wheat growing district in Canada. The wheat is stacked in the field, and afterwards thrashed, during the leisure of autumn or winter, by a machine in the open air; a dozen or more ricks being commonly seen in a single field. People were in the midst of harvest operations, and the wheat crop may safely be pronounced a full average. That insidious enemy to this, the most valuable of the farmer's crops, the *rust*, had in some instances been injurious to the grain, but not, we believe, upon the whole, to any alarming extent. We cannot refrain from mentioning the following incident, as it struck us with all the force of novelty, so different to all our associations connected with the joyous season of harvest at home. While going in search of Mr. Christie, and the shades of evening rapidly approaching, we met him in a wheat field consisting of 200 acres, seated in a cart by the side of an indian chief, followed by upwards of twenty indians, dressed in their usual costume, with their scythes, rakes, &c., returning from the scene of their labors. This was indeed a novel sight to us, and strongly reminded us of that cheering portion of holy writ, in which the time is shadowed forth when the weapons of war-

fare shall be transformed into those of husbandry, and the nations of the earth learn war no more. Mr. Christie informed us that he preferred the red men to the white for harvest work; that they were very orderly and honest, although in this instance they were heathens. It is humiliating to reflect that these contented children of the forest should favorably compare in several essential points of morality with many of a more favored race. The destructive vice of intoxication is one of the chief hindrances to man's social and moral progression. We found that Mr. Christie was careful not to allow intoxicating drink to his work-people, red or white; and without pledging ourselves to extreme views upon this question, we think it to be one of the first duties of every good member of society, of every well wisher of his own race, to use his utmost influence in promoting temperance and sobriety.

July 31. We enjoyed the gratification of spending a day with Henry Moyle, Esq., of the Sheepwalk, near Brantford, a gentleman of long and extensive experience, and so favorably known as an extensive agriculturist, both here and in England. Mr. Moyle's estate has a very neat and picturesque appearance, the pastures forcibly reminding us of some of the best grazing districts in the old country. It is surprising how soon a farm upon the "oak openings," as these soils are termed, can, by a judicious application of labor, be thoroughly cleared up and made to produce abundant crops, and assume the aspect of an old settled farm. Not being heavily timbered, clearing is comparatively cheap and easy; while the soil is such, in the original combination of its constituents (except where sand unduly predominates) as to ensure by good management a profitable return. Sheep should form a prominent feature in the farming of these soils; and we must content ourselves by referring the reader to a valuable paper, which appeared in our January number, from the pen of Mr. Moyle. His flock consists of the Leicester (the Bakewell variety), producing a good fleece and heavy carcass, having an aptitude to fatten and early maturity, as some fine specimens of fat wethers testify, that we have seen on the shambles in the Toronto market.

We had an opportunity of just calling on Allen Good, Esq., the President of the Gore District Agricultural Society. Mr. Good was getting in his wheat, and pointed out to us those portions that had been sown broadcast and others that were drilled. Little or no difference appeared in the result. But we think a single experiment of

this kind not sufficient to justify a general conclusion. Taking a number of experiments together, made in different years and on different soils, and of course subjected to varying seasons, we are strongly inclined to think that the drill method of sowing, all other circumstances being equal, will prove the most economical and successful in the ultimate result. *Experience* is certainly in favor of drilling.

The Messrs. Allchin, of Paris, rake and snathe manufacturers, have recently brought out an improved chaff-cutter, on a principle very similar to what we have seen in some parts of the States. No farmer ought to be without such an implement, and we think the one just mentioned both economical and efficient. We afterwards went over the extensive works of P. C. Van Brooklin & Co., at Brantford, a firm well known for the excellent quality of the articles it turns out. We found most kinds of agricultural implements manufactured here; and a considerable improvement has been very recently made in their threshing machines, diminishing the motive power, whilst increasing the result. These machines, in their present improved state, appear to us the best we have seen. We trust that both these firms will send to the approaching exhibition, at Kingston, several specimens of the articles they manufacture. In this way may both manufacturers and farmers be mutually benefited.

Want of space forbids any lengthened observations on what we saw and admired in the Niagara District. The scenery in several parts is delightful; the farms generally well cleared and cultivated, and a bountiful harvest had just been gathered in. Fruit, for which the district is much celebrated, is this year but indifferent, except cherries, and some kinds of plums; the peach crop will be almost a failure. We heard here, as in many other parts of the country, much complaint among the managers of agricultural societies of the apathy of many of the farmers, and the want of active support which it is both their duty and interest to render. Truly all attempts at improvement are attended with difficulties; and the energetic promoters of agriculture should not relax their efforts in a cause which both nature and man's necessities have pointed out as progressive.

Before closing these imperfect and hasty observations, we must take a passing glance at some things we saw on the farm of W. H. Dickson, Esq., M.P.P., of Niagara. Our time, we regret, was very short, but sufficient to convince us that Mr. Dickson possesses some very fine stock, well

worthy the attention of such farmers—and we wish they were more numerous—as desire to improve in this important department. We may just instance a span of pure blood horses of superior merit; some good specimens of Ayrshire cattle; Durhams excellent; sheep of the Leicester breed, very good and apparently pure. What struck our attention most was a young Durham bull, two years and a half old, of beautiful proportions and in a most thriving condition. If this animal should continue as it advances to full maturity the harmonious development of its present many excellent points, it will certainly rank among the first on this continent. His dam was *Princess*, a pure and superior animal, and his sire the well-known *Wellington*, the property of John Wetenhall, Esq. Mr. Dickson, we hope, will send several specimens of his stock to the Kingston Exhibition, when our readers may judge for themselves of the correctness of our remarks. It is much to be regretted that our farmers generally do not appreciate the labours of the few enterprising breeders we have among us. The attention and expense required in procuring and sustaining improved breeds, are by the generality of farmers but very imperfectly understood.

HIGHLAND & AGRICULTURAL SOCIETY OF SCOTLAND.

The half yearly meeting of this very useful and long established society was held in the hall, Albyn Place, Edinburgh, July 23rd. The president, the Duke of Roxburgh, K.T., occupied the chair. We glean the following facts from an elaborate report of one of our exchanges, "*The Scottish Agricultural Journal*," an exceedingly well conducted weekly paper, published in Edinburgh.

After the disposal of some preliminary business, brought before the meeting by Mr. Hall Maxwell, the secretary, the annual report of the *Veterinary College*, which has been for a number of years connected with the society, and under the very able management of Professor Dick, was presented and received. The institution continues very prosperous, nineteen students having graduated and received diplomas during the last year. The diploma was eagerly sought for as a distinction by veterinary students, and was recognized by the Horse Guards and East India Company as a qualification for employment in their service.

The secretary reported that successful arrangements were in progress for holding a show in the

summer of 1850, at Glasgow; the one for this year appears to be suspended for want of sufficient support. Professor Low made a powerful appeal for aid, and most convincingly pointed out the great advantages of this venerable society, which has done so much, not only for the agriculture of Scotland, but of the whole empire, nay, of the civilized world. There now appears good ground for hoping that the society will be able to continue for the future its usual annual exhibition.

Chemical Department.—The Highland Society has now incorporated with it a chemical laboratory for experimental purposes. A distinct society previously existed, under the superintendence of Professor Johnston, who has resigned. Dr. Anderson is now the chemist of the Agricultural Society; he commenced his duties last January, since which about 100 analyses of manures, soils, &c., had been made for different applicants. Several of the most intelligent farmers are lending their aid to the chemist, in carrying on his enquiries and experiments, so that a *practical* character may as much as possible be given to this important department. Turnips grown with guano were generally thought inferior for feeding purposes to those grown with farm yard manure. Arrangements were making to bring this matter to a final decision. They were also engaged with a series of analysis of different sorts of grains, oil cakes, and other species of cattle-food, for the purpose of drawing up a table of their comparative values, so that the farmer may, when the prices of home produce are low, be able at once to employ the produce of his own farm, in place of selling it and buying foreign oil-cake, or other similar food. It was likewise proposed to ascertain, by careful experiments, the different feeding values of turnips grown on different soils and altitudes. The composition of the principal soils of Scotland was desirable to ascertain, with a view of assisting practice and fixing on the actual characters and constitution of a really good soil. They will at first limit their investigations to wheat soils, the necessary arrangements for which are perfected. Mr. Dickson, Laughton Mains, had agreed to grow wheat for a succession of years in the same field, during the whole of which time a series of analysis of the soil and produce would be made at definite intervals, along with such experiments as might appear desirable. Mr. Finnie, Swanston, stated a number of facts, showing the valuable aid chemistry had rendered to practical agriculture, particularly in artificial manures, and in detecting adulterations, or pointing out

substances hitherto regarded of little worth, but really possessing high fertilizing or feeding properties. Honourable mention was made of the value of Professor Johnston's services.

Supplementary Charter.—An effort has been made to enable this society to establish a sort of college for agricultural youth, with a power of issuing diplomas of the nature of degrees, but as yet without success. The directors, however, resolved to persevere.

Potato Disease in the Highlands.—The secretary observed that it having been reported that the potato blight had re-appeared in the Western Highlands, a month earlier and with greater virulence than in former seasons, he had communicated with a number of well informed gentlemen resident in that part of the country, who had the most ample opportunities of observation, and who assured him that not only had there been no disease, but that the potatoes were looking well, having overcome the effects of the late severe frosts.

We copy from the *Cobourg Star* the following announcement, with much pleasure. It refers to a subject of vital importance to the interests of this country, and His Excellency deserves the best thanks of all classes of our fellow-subjects for his discriminating and liberal offer. We hope it will be the means of calling forth an essay alike worthy of the noble donor and the importance of the theme.

LORD ELGIN AND THE PROVINCIAL AGRICULTURAL ASSOCIATION.—A PRIZE OF £50.

The President of the Agricultural Association of Canada West, has requested us to announce to the public the offer of his Excellency Lord Elgin, of a prize of FIFTY POUNDS for the best treatise on the bearing of the St. Lawrence and Welland Canals on the interests of Canada, as an agricultural country.

Competitors will send their treatises on or before the first day of February, 1850, to the office of the Governor's Secretary. Each treatise to be headed by a motto, and accompanied by a sealed letter endorsed by the same motto, containing the name and address of the writer. The letters will not be opened until the prize shall have been awarded.

It is his Excellency's intention to request the Council of the Association to name two gentlemen to act as Judges, to whom his Excellency will add a third.

As it is his Excellency's desire that *practical information*, on a subject deeply affecting their interests, should be presented in clear language, and an accessible form to the farmers of Canada, through the medium of the prize, he trusts that competitors, in framing their treatises, and the

Judges in pronouncing their award, will keep this object in view.

We conceive Lord Elgin to be most happy in his selection of a subject for a prize. The question of canals in relation to an agricultural country is but little understood, yet it is a question of all others, situated as we are, that should be thoroughly comprehended by every body. We have no doubt that the handsome sum given by his Excellency will cause such a treatise to be laid before the public as will convey to them the required information.

ANNUAL EXHIBITION OF THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The cattle show and exhibition of implements, under the auspices of this important society, took place this year, at Norwich, during the third week of July. From the accounts which have reached us, we are led to conclude that the recent exhibition has in no essential points been inferior to its predecessors, and in some departments, particularly in the number of agricultural implements and machines, it appears to have been superior to any previous shows.

The show yards were placed at a distance of two miles to the south of the city, on a level space well adapted for the purpose, and commanding a wide prospect of the surrounding country. They cover the immense extent of 14 acres, and, being symmetrically arranged in parallel sheds, and approached through a long avenue of booths erected to provide every variety of refreshment and amusement for visitors: the effect produced by such a vast encampment is not unsuitable to the idea of a great Agricultural Fete Champetre. From year to year, the implement yard has shown a remarkable increase, and from the following table it will be seen that in this department the society has shown far stronger and more vigorous signs of vitality than in that of stock:

Year of Meeting.	Locality.	Entries of Stock.	Entries of Implements.
1839	Oxford	249	23
1840	Cambridge	352	36
1841	Liverpool	319	312
1842	Bristol	510	445
1843	Derby	730	508
1844	Southampton	575	948
1845	Shrewsbury	437	942
1846	Newcastle	613	785
1847	Northampton	459	1,321
1848	York	724	1,508

The immense number of implements which have been exhibited for the last few years, the large space which they necessarily occupy, and the expense which the society incurs in providing room for them, has attracted to this subject not only the serious attention of the council, but of all the friends of agricultural improvement. It has been observed that at each succeeding exhibition this department degenerates more and more from the character of an "exposition," and approaches to that of a bazaar. The great implement makers,

encouraged by the facilities of carriage afforded them, send an overflowing number of articles, and fill the sheds of the yard with a dreadful array of scarifiers, clod-crushers, pulverizers, and other instruments, not more formidable in name than in appearance. Not content with one specimen of each kind, they have perhaps two or three of different sizes, and with some slight variation in structure to make them admissible. The idea of exhibiting new inventions or the best forms of indispensable implements—an idea absolutely necessary to be kept strictly in view where prizes are awarded—is of course lost sight of. The humble but ingenious mechanist sees his little stall overwhelmed by a wholesale array of articles beside it; and the great manufacturer has reason to complain that, having gone to a large expense, and done all in his power to extend the taste for the application of mechanical skill to the operations of husbandry, he is rewarded with a few paltry medals, and the empty honour of a public exhibition, necessarily excluding that test of practical experience by which alone the substantial support of the farming interest can be won. In this state of things many of the most influential implement makers ask for the society to do away with its prizes, and to allow them to exhibit their manufactures to the public in such a manner that they may be seen in operation, and that ample time may be given for the inspection. The society, on the other hand, are anxious to adhere to the old system, and perceiving that the implement yard is outgrowing their means of accommodation, they are anxious to impose a ground charge on exhibitors, to require from them a plan of the mode in which they intend furnishing their stalls, and to adopt such other checks as may be necessary to meet the evils of the present system. How the question will be decided it is at present impossible to say, but the permanent interests of the society and of agricultural improvement generally are largely involved in the prompt determination of it.

Of the great show of implements at this meeting, it may be truly said that a more important collection of agricultural machines never before was assembled together in one yard. It is true that there are perhaps fewer novelties than usual; but there are much fewer absurdities—far less indications of desperate attempts to realise crude and worthless ideas. Then, again, the workmanship displayed is of a very improving order, a result which is pretty clearly to be attributed to the great influence exerted by the meetings of the society in exciting the exertions of the implement makers on the one hand, and inducing the patronage of the farmer on the other. As the reporter of the show of implements at Liverpool very correctly remarked, (*Journal of the Royal Agricultural Society*, vol. ii. p. 103,) when tracing the connection between the advance of the implement makers' skill with the country meetings of the society:—"At their first, or Oxford meeting, there were some examples of good machinery and workmanship, but many more of rude, cumbrous, and ill-executed implements. At Liverpool, many machines were exhibited, not only of surpassing

skill in contrivance and execution, but also having for their object the effecting of processes in tillage husbandry, of the most refined nature and acknowledged importance, but hitherto considered of very difficult practical attainment. Some of these may already be considered as forming part of the necessary apparatus of every well-managed farm, and to be essential to its economy and profit. This vast stride in the mechanics of agriculture, made within so short a period, has doubtless arisen from the congregating together of agriculturists and mechanicians from all parts of the empire, and a still higher perfection in machinery, may be confidently anticipated, from the opportunity offered under the auspices of the society, of periodically contrasting, and estimating the merits of varied implements used for similar purposes in different localities and soils. It is apparent that the manufacture of even the commoner instruments has already, to a great extent, passed out of the hands of the village plough-wright and hedge carpenter, and been transferred to makers possessed of greater intelligence, skill and capital. The improved style of finish, the greater lightness and elegance of construction, and the generally superior adaptation of the means to the end, in every class of implements, which distinguishes the implements of the present meeting, were sufficient manifestations of the beneficial results arising from the encouragement given by the society to these objects." Large in number as are the implements at the Norwich meeting, they would have been still more so had not even the large dimensions of the show yard proved insufficient, by one third, to supply the extent of ground for which the implement makers applied.

The principal day for the cattle show was Thursday, and the yard was crowded.

The short-horned bulls formed a most striking portion of the show—most majestic brutes they were, certainly, with their vast necks, deep chests, and huge square flanks. None of them either—and the remark is general—appeared to be over fed. There were no mere lumps of living tallow supported on four legs, which appeared hardly able to bear their unwieldy burdens; on the contrary, the animals appeared to be in the highest condition in the best sense of the word, that is to say, in that condition developing to the full their muscular powers, and the peculiar characteristics which mark their separate breeds. The bull which carried off the first prize will bear it to the other side of the Tweed. He is a splendid fellow, milk white; his coat glancing like that of a racer, and showing a perfect development of the highest points of his kind. He was bred by the Duke of Buccleuch. The young short horn bulls did not make a good appearance, and carried off no prizes. The Devon bulls, that fat dappled race, were well represented by the winner of the first prize, a prodigious animal bred by Mr. Quartley, of Devon. The Herefords were ranged not far from the Devons, and it was highly interesting to remark the peculiarities of the two breeds—the characteristic round outlines of the former, and the square proportions of the latter. The prize for the best Hereford bull was awarded

to a fine white-faced animal of splendid proportions and development, bred by Mr. Price, of Hereford. A Gloucestershire beast was adjudged the next best.

The cows did not appear as exhibiting such fine specimens of perfect breeding as did their male kindred. However, they turned out some capital beasts of their class, and it was pleasant, after the eye had become familiarised with the gruff and grizzled physiognomies of their majesties the bulls, to turn from them to the softer and milder, although, perhaps, less intelligent looking faces, of the "milky mothers." There were several of the cows which attracted much attention, and in general their small expressive heads and well-moulded forms were good specimens of that vaccine (if there be such a word) and pastoral species of grace, which is a frequent characteristic of the animal in question.

Two very fine specimens of the grey and dun coloured Italian bulls came amongst the extra stock. The mass of jolly farmers who surrounded them treated the poor foreigners with great neglect, but, to an untechnical eye, they were amongst the most interesting beasts in the show. They belong to the old Roman breed, such animals, perhaps, as Virgil saw in his Mantuan meadows, and Horace had yoked to the plough which turned up the Sabine farm. Apart from all classic associations, however, the animals were graceful and majestic beasts in themselves, far more picturesque and *deery* in outline and appearance than their heavy square-built Saxon compeers. The spread of their horns was magnificent.

The show of stallions was very fine. There were stallions for dray purposes, huge animals, perfect giants in bulk of limb and swell of muscle; stallions for agricultural purposes, of a lighter and less muscular class—and roadster stallions, compact, high-spirited brutes, uniting pace with strength, and docile beauty of appearance with muscular energy. The dray stallion which won the first prize was a most elephantine-looking brute, bred by Mr. Gleanes, of St. Neots. The 30*l.* prize for a stallion for agricultural purposes, was awarded to the specimen sent by Mr. Coulson, jun., of Norfolk—a stately creature—of great *thew* and sinew.

Near the stallions were ranged the mares and foals—a class of stock, which, as a body, received the unanimous though not official commendation of the judges. Of course these animals did not possess, to the unskilled in horse flesh, the attractive appearance of the stallions; but they were very interesting, with their rough, unkempt colts by their sides. Mr. Thomas Catlin, of Butley, exhibited a beautiful mare of the class intended "for agricultural purposes," and carried off the highest prize in this department.

As regards the sheep, the shearing Southdowns received the unanimous commendation of the judges. The pens in general presented exquisite specimens of the different breeds of the animal, and altogether this department of the show appeared to be very equal and highly creditable to the breeders. In general, the animals were in

beautiful condition—as plump as partridges, without being so fat as to destroy what little symmetry the somewhat vulgar-looking *contour* of the sheep presents. When you pressed their fat flanks with the hand, the sensation was as though you were squeezing a spring cushion. The fleeces of many of the long-woolled kind were literally as white as snow, and the breadth of back which the Leicesters exhibited, as they rolled luxuriously upon their straw bedding, was somewhat remarkable. The high condition both in fleece and flesh of the “woolly people” could not but be apparent even to the most superficial observer.

It is due to the society, to the judges, and to the agriculturists of the eastern counties, to state, that at this exhibition the rage for stock, fattened till they were fit only for the tallow chandlers’ melting tubs, has been entirely extinguished. Over-feeding, with all its painful and disgusting consequences, does not, at least as far as cattle are concerned, exist in this district. The stock exhibited is in excellent condition, and nothing more, and it would really appear as if there was some prospect that the encouragement of the society would now be permanently given to the production of the best breeds. The eastern counties have in times past been principally a feeding rather than a breeding district, and therefore the exemption of this from the great blemish of former exhibitions is the more creditable to them. To this district, tempted by the vast supplies of turnip and other artificial food, vast quantities of the lean stock of Scotland and England have been drawn; and from this, when in good condition, they are transported in extraordinary quantities, by the railway to London and the other great markets of the kingdom. Latterly, considerable efforts have been made to introduce throughout the eastern counties the purest breeds both of sheep and cattle, and a glance at the names of the most successful candidates in the list of prizes, will satisfactorily show that the matter is in good hands.

The display is upon the whole equal, if not superior, to that of any former meeting. There never has been an exhibition of the society in which all the classes of stock have come out so strongly, although there may have been occasions on which particular classes have shown greater excellence and been present in larger numbers. In no department was the show of a decidedly inferior character, and in nearly every one the animals were of extraordinary beauty, size, and purity of breed.

Both the council and pavillion dinners were as usual numerously attended. The Earl of Chester, the president of the society, occupied the chair. We notice, among the numerous visitors and distinguished personages, the names of the Duke of Cambridge, and that zealous patron of agriculture the Duke of Richmond, the Bishop of Norwich and a number of the clergy, including those two eminent geologists, the Dean of Westminster, Dr. Buckland, and Professor Sedgwick

of Cambridge, whose eloquent and instructive speech we could like, had we room, to transfer to our pages. It must have been a truly gratifying spectacle to every real lover of his country, to witness, as on this great occasion, so large an amount of rank and talent arrayed in the noble cause of agriculture.

We are indebted to the *Norfolk News* for the following report of the Rev. E. Sidney’s lecture to the members of the Royal English Agricultural Society, at their recent annual meeting at Norwich.

REV. E. SIDNEY’S LECTURE ON THE PARASITIC FUNGI OF THE BRITISH FARM.

This lecture was delivered on Wednesday afternoon, to a numerous and attentive audience. From the far too-extensive field selected by the lecturer for the subject of a single lecture, it, of necessity, was sketchy in its nature and rapid in its transitions. Some of our readers, not intimately acquainted with this class of the diseases of corn crops, and as little aware of the ravages they commit, will very naturally ask what are fungi? This very question Mr. Sidney undertook, some years since, to answer in a little work “On the Blights of Wheat and their Remedies,” published by the Religious Tract Society. “Fungi,” he said, “belong, botanically speaking, to the class of *thallogens*, of which there are three alliances well described in Lindley’s Vegetable Kingdom. These alliances are *algæ*, *fungi*, and *lichens*. The first live in water, or very moist places; the last two live in air. Between fungi and lichens the chief distinction is, that fungi are never accompanied by any of those curious green *gonidia*, or separated cellules of the medullary layer of the thallus, which, as well as their spores or seeds, form reproductive matter in lichens. Suppose then, the question asked, What is a fungus? The answer is, it is a cellular, flowerless plant, deriving its nutriment by means of a *thallus*, to which the name has been given of *mycelium*, or *spawn*; it lives in air, and is propagated by spores, which are naked, or by *sporidia*, so called when inclosed in *asci*, or little vesicles. The way in which these spores germinate, generally speaking, is by a protrusion of the inner membrane, or an elongation of the outer, thus lengthening out its spawn. This is the usual or normal mode: but, as will be hereafter seen, apparently not the only one, for we shall have to describe another method of germination in the case of certain parasitic fungi belonging to our subject. The term *sporule* will also occur, by which we mean the fine contents of the seeds of the fungi. We shall see, in the course of the work, that these fine contents appear to circulate in plants, and grow. Fungi may be said to consist of a mass of little cells, or little threads, or of both combined in various ways. They have no fructification except their spores, or sporidia, of which the methods of attachment are singularly curious and beautiful. In their respiratory functions they approach to the peculiarity of animal rather than vegetable life, for they absorb oxygen and exhale carbonic acid gas. Like flesh, they contain a great quantity of nitrogen; and the substance called *fungine*, extracted from them by the chemist, bears a near resemblance to animal matter. They derive their nourishment from the substances on which they grow, and not, as is the case with the lichens and *algæ*, from the media in which they exist. The juices impregnated with the peculiar principles of the matter to which any particular fungus is attached, form its appropriate food.”

The importance of these fungi, and the loss that followed to the farmer, some time since attracted the attention of Professor Henslow. His description of those minute yet extensive varieties, which too often tenant the wheat plant, was given with his usual clearness (*Journal of the Royal Agricultural Society*, vol. 2, p. 1.) and will well illustrate the observations of the Rev. Edwin Sidney, on the present occasion :

"All fungi, be it remarked, grow upon some kind of organized matter, none of them deriving their nutriment directly from the soil, water, or the atmosphere, like other plants. They are of great importance in the economy of nature, by assisting in the decomposition of decaying or decayed animal and vegetable substances. A few of them appear to grow upon healthy subjects, but these may possibly most frequently have originated on a part where disease or decay had already effected some alteration in the tissue; and then, by spreading rapidly from thence, they may afterwards occasion the decay of other parts also. None of this tribe of plants attain to any great size, when we compare them with many species of flowering plants, or even with many of those of other neighbouring tribes, (as the ferns, &c.) which never flower. Among fungi we find a multitude of extremely minute species, which it needs the skill of an experienced microscopic observer to detect and examine; and it is also among the very lowest of the several groups, into which these minute fungi are classed, that we must search for the few species that produce the fatal diseases in corn we are about to notice. But if these fungi are themselves so exceedingly small, how much more so are those reproductive bodies, analogous to the seeds of flowering plants, by which they are propagated and multiplied! So very minute are these sporules (as botanists term them) that they altogether escape observation by the naked eye, and can only be just distinguished by the highest powers of the microscope. Many of these kind of fungi live beneath the scarf-skin, or epidermis, and within the very substance of certain plants. In the progress of their growth, they raise blisters under the epidermis, and, when arrived at maturity, they burst through it, and then form spots or irregular blotches of various colours, which are frequently orange, brown, or black. These spots (or *spori*) are masses of fructification, and are surrounded by the tattered edges of the ruptured epidermis. A vast number of these fungi are known to botanists. Like parasitic animals, they are restricted in their powers of attack, being able to live on certain species only, and even on particular parts only of particular individuals of these species. There is often a strong general resemblance between many of them; but a naturalist will readily detect such important differences between two fungi which may infest distinct species of plants, that he is compelled to consider them also as species distinct from each other. Thus it happens in the animal kingdom, that different species of flea, and different species of lice, can exist only on particular species of quadrupeds or birds. The flea which infests dogs is distinct from that which annoys man. So also with these parasitic fungi; some are restricted to one species of plant, some to another; but, generally speaking, most of them are capable of living upon more than one species of the same genus; where, of course, we might expect the resemblance in all points to be very close. Some fungi confine their attacks to the seed, others to the stem or leaves, and some even to one side only of the leaves. One of those which attack wheat live only on the grain, another more particularly attacks the short stalk (*pedicel*) on which each flower is seated, whilst three of which we are about to speak are restricted to the straw, chaff, and leaves; but all five live at first beneath the epidermis, and not upon it. In this respect, they bear a close analogy to those parasitic animals which live

within the bodies of other animals, some immediately beneath the skin, others in the intestines, and others again within the very substance of the muscle. It is the extraordinary minuteness of the sporules (or seed-like bodies) of these fungi, which allows of their being absorbed by the roots, and probably also through the pores of the stem and leaves of plants; and then they are conveyed by the sap to the various parts where they are enabled to germinate, grow, and fructify. The sporules of fungi appear to be everywhere dispersed through the atmosphere, ready to germinate wherever they may find a dead or living subject in a condition suited to their attack. Common mouldiness, for instance, which so readily forms on many substances in moist situations, is the most familiar example of the inconceivable numbers in which the sporules of a minute fungus are everywhere diffused. The difficulty of admitting such a universal dispersion of these sporules, has induced some modern philosophers to support the old exploded theory of spontaneous generation. Of this theory, however, we may safely assert, in the present state of human knowledge, that it involves difficulties an hundred fold more inexplicable than any which attend on the opposed theory, which teaches us that all living creatures proceed from similarly organized beings, originally called into existence at the fiat of the Almighty. We shall therefore consider these minute fungi to be plants, which have proceeded from, and are capable of reproducing, their kind by means of those minute sporules, with which direct observation has made us well acquainted."

It is only of the *general remarks* of which the lecture was chiefly composed, that we have been able to avail ourselves. These were valuable and instructive, and, although with the exception of the prevention of the smut in wheat, scientific researches have not yet enabled us to ward off the attacks of these fungi, yet, it is very probable that much in this way will be hereafter accomplished. For as the Professor remarked, when speaking of the *Bunt*, *Smut Balls*, or *Pepperbrand*—"The fungus which occasions this well known and much dreaded disease has hitherto been met with only in the grains of wheat. Its presence is readily recognized by the peculiarly disgusting odour of the infected ear. It may be detected in the young seed, even in the very earliest state of the flower bud; and when fully ripe it most frequently occupying the whole interior of the grain, but without bursting the skin, so that the wheat seed retains very nearly the same size and shape that it would have assumed had it been perfectly sound. When examined under the microscope, the Bunt-fungus is seen to consist of vast numbers of extremely minute globules, of a dark colour, and which are at first attached to a mass of matted thread-like matter, analogous to what is termed the spawn in mushrooms, and other Agarics—and which in those plants spreads underground, and frequently occasions the remarkable appearances called fairy-rings. It is not easy to see this spawn of the Bunt-fungus, but the little dark globules, called spores, may readily be detected. They may be considered analogous to the seed-vessels of flowering plants, and each of them contains a mass of almost inconceivably minute sporules by means of which the plant is propagated.

"The reproductive powers of fungi are quite beyond our comprehension. Fries, one of our greatest authorities, has calculated that a particular fungus may contain 10,000,000 sporidia. The terms *spora*, *sporula*, *sporidia*, &c., have either been applied synonymously or vaguely by different authors. The more modern practice appears to be, to use *sporula* for the ultimate granules analogous to seeds; *sporidia* for the cases or vessels containing them; and *spore* for an additional covering, which sometimes includes several *sporidia*.

Mr. Bauer has accurately measured the spores of the present species, and finds their diameter is not more than one sixteen-hundredth of an inch. A single grain of wheat (estimated at less than the one-thousandth of a cubic inch) would therefore contain more than 4,000,000 such spores; but it is hardly possible to conjecture how many sporules each spore contains, since they are scarcely distinguishable under very high powers of the microscope, and then appear only as a faint cloud or vapour, whilst they are escaping from the ruptured spores.

"When this disease prevails, it greatly deteriorates the value of the sample; imparting its disgusting odour to the flour, it makes it less fit for bread; but I understand that ready purchasers are to be found among the vendors of gingerbread, who have discovered that the reacle, and whatever else they mix up with it, effectually disguises the odour of the fungus; if this in itself is really innoxious, there can be no objection to such a mode of employing the tainted flour; but some are of opinion that it is to a certain extent deleterious. Although the Bunt-fungus confines its attacks to a young seed, it seems to be a condition essential to its propagation, that it should be introduced into the plant during the early stages of its growth, and that its sporules are most readily absorbed by the root during the germination of the seed from which the plant has sprung. It has been clearly proved that wheat-plants may be easily infected and the disease thus propagated, by simply rubbing the seeds before they are sown, with the black powder, or spores, of the fungus. It is also as clearly ascertained, that if seeds thus tainted be thoroughly cleansed, the plants raised from them will not be infected. This fact is now so well established, that the practice of washing or steeping seed-wheat in certain solutions, almost universally prevails. Upon simply immersing the grain in water, the infected seeds float, and on the water being poured off, nothing but the sound ones remain in the vessel. This simple process, however, is never perfectly effective, because, in threshing the wheat, many of the infected grains (smut balls) are crushed, and the spores are dispersed in the form of a fine powder, which adheres with considerable obstinacy to the surface of the sound grains, by means of an oily or greasy matter found in the fungi. In order to detach them thoroughly, it has been considered useful to add some alkaline ley to the water in which they are washed; because oil and alkali unite and form a soapy substance, and then the spores will no longer adhere to the surface of the grains of wheat. Lime, possessing alkaline qualities, has been long employed for the purpose. Common potash, and substances containing ammonia, as the liquid portion of stable manure, have also been used. But as some persons employ brine, sulphate of copper, arsenic, and a variety of other materials which do not possess alkaline properties, it is supposed that all these solutions act rather by destroying the vegetative properties of the fungi, than as a means of removing them from the surface of the grains. It may, therefore, be worth while to institute a set of experiments to determine which supposition is really correct. Perhaps some portion of the effect may be owing to the increased specific gravity of the liquid; or perhaps some portion of the solution may be imbibed by the steeped corn, sufficient to prevent the sporules of the fungus from germinating within the substance of the plant; just as corrosive sublimate, essential oils, and Russia leather prevent the formation of mouldiness. I may also add, that the temperature at which the solutions are applied may be of some importance."

To a minute fungus, then, is owing the bunt or smut balls so well known to the farmer—from another arises the smut or dust brand (often confounded with the last described)—to another the rust, or red gum—to a fourth

the mildew. It is of the first importance that the nature of these ravaging diseases of corn plants should be well and generally understood, since it is one great step to their prevention or cure, to understand their nature and the laws by which their production is governed. In the case of the smut, we all know that the precaution of the farmers, by means of various steepings, have very materially reduced its ravages. Even in the case of the mildew in wheat, the late Rev. Edmond Cartwright successfully conducted some experiments, which proved that even that formidable disease might be successfully cured by merely sprinkling the diseased plants with a weak solution of common salt. It is, therefore, a very insufficient reason for delaying our examinations of these fungi, that they produce diseases which we cannot at present completely cure.

Mr. Sidney commenced his lecture (which to render it intelligible required very numerous diagrams, in consequence of the absence of which from our columns, our report must be brief,) by stating that he had no common satisfaction in addressing an audience in a county, where, for many years, his humble efforts, made long before similar exertions had become general, had been so favourably received and kindly acknowledged by all classes of persons. He would, however, indulge himself by no further preface, but would proceed at once to the task which he had cheerfully undertaken. He should endeavour to describe, in simple, popular language, the nature and habits, and, as far as he could, the preventive or palliative of the principal parasitic fungi of the British farm. Mr. Sidney then enumerated several types of the fungus, and afterwards proceeded to say—so numerous are the seeds, spores, or sporules of the fungus, that it is not easy to conceive any place from which they are excluded. Those which grow on matter in which decomposition has decidedly begun, have been well called the scavengers of nature, and others of a most minute description, some of which belong to my subject, apparently attack tissues in full health and vigour. With regard to the properties of the fungus, I can only mention, in few words, that they are respectively *edible*, *poisonous*, *medicinal*, *intoxicating*, and *luminous*, lighting up with their lustre mines and caverns, where they grow, and assuming at night, in many places, an appearance of pendulous lamps, from the stems on which they vegetate. Mr. Sidney went on to notice the ergot on rye and the ergot on wheat. He said that botanists termed this fungus, which accompanied the ergot, *Ergotetia Arborescens*; but the only argument in favour of its producing ergot, was that it constantly attended it; but it did not follow, that because things were coincident, they were cause and effect, and the best examination did not warrant such an inference in this instance. Mr. Sidney subsequently alluded to different kinds of moulds, especially mentioning the *Botrytis*. It had been stated, he remarked, and he himself had verified it by a series of experiments, that if a single drop of acid was mixed with albumen, in eight or ten days what were called necklace moulds would appear. In his experiments, he had found that every sort of vegetable with acid yielded a mould, but when the albumen contained a neutral salt, none appeared. Oxide of lead hastened it; copper, nickel, cobalt, &c., retarded it; oxides of iron, antimony, and zinc, had no effect; but all perfumes, even the least drop of essential oil, stopped it. In reference to the *Bunt*, the rev. gentleman observed, that it had been stated that the potato disease had been propagated by burning matter. In mouldy apples and pears, some experiments of Mr. Berkeley, on the growth of the bunt, tended to show that its propagation might arise from the mere grumous matter in spores. The experiments were made thus: wheat seeds were immersed in a mixture of water, and the spores of bunt, and a curious

mould sprung up. The wheat was sown, and the plants came up affected, but no communication could be traced between the cells and the shoots thrown out by the spores. The rev. lecturer noticed lastly the various fungi attacking animal tissues. Sappy meat, he said, contained a fungus somewhat analogous to the highest species of the vegetable fungus. *Sclerotia* (from *skleros*, hard) often appeared in animal matter, under particular circumstances. But these were only states of other fungi: the fungus of the West Indian wasp, of the caterpillar of New Zealand, and the muscardine of the silkworm, were well known examples of fungi attacking living animals. The last was easily propagated by inoculating healthy caterpillars. This he mentioned, to shew that fungal disease might be conveyed from one animal to another in a state of health.

An accurate knowledge of such facts might be of great use in investigating certain diseases prevalent amongst animals on the farm, hitherto unattainable.

Animal fungi grew only on the skin, or the mucous membrane. After noticing a few varieties of the animal fungi, the rev. gentleman concluded: I have now completed my humble attempt to give a popular outline of the chief parasitic fungi of the farms of England, which only require simpler names to be easily understood. The farmer must learn to distinguish them from diseases of the superficial tissues. The subject is well suited to farmers' clubs, where good botanists and microscopists might be induced to attend with their instruments. Simplicity is the handmaid of all useful science, whose truths are only impeded by needless grandiloquence. I can say by experience that endeavours to propagate it will be found God's subordinate auxiliaries to the higher ends of men of my own sacred calling; and while we see that there is not a thing so simple or so apparently mean but that it sparkles with some beam of the skill of its great maker, I conceive that it befits the office I bear, to shew that the nobler teaching of divine wisdom by things revealed, does not tend to efface but to elevate our conception of God's perfection in things created. This life was not made to be neglected, nor meant to be unobserved; and if the unpretending gleanings I have gathered in my very few moments of leisure shall this day have proved in the least degree acceptable to the present audience, or generally of any interest to the British Farmer, (of the kindness of whose disposition I have had ample proofs) I shall rejoice, my lord, in the honour conferred upon me by being allowed the privilege of addressing you. [Applause.]

PROFESSOR JOHNSTON.

It affords us sincere pleasure to learn that this eminent agricultural chemist has safely reached our shores. Professor Johnston will receive a hearty welcome in every portion of the British Provinces and of the United States that he may honour with a visit. The Secretary of our Provincial Association has received a letter from him, accepting an invitation to attend the approaching Exhibition at Kingston. The Professor will deliver a lecture in the Court House on the Wednesday evening of the Show week. From the eminent position which Professor Johnston occupies in the higher departments of chemical science, as an able teacher and an accomplished author, with the very extensive opportunities he has enjoyed of observing the farming practices of

different nations, far beyond, probably, any other living chemist, we are led to conclude that his presence among us will be regarded as one of the principal attractions of our anniversary meeting.

We likewise learn that Professor Norton, of Yale College, Connecticut, has signified his intention of being present. He was, we believe a pupil of Professor Johnston, and has already attained considerable celebrity as a teacher and experimentalist. Those of our readers who had the good fortune to hear his able and instructive lecture last year, at the State Fair in Buffalo, will regard his presence as a most valuable acquisition. Altogether, the prospects of the Kingston meeting are very cheering.

THE WELLINGTON DISTRICT—ITS AREA, SOILS, SIZE OF FARMS, STATE OF CULTURE, LIVE STOCK, AGRICULTURAL SOCIETIES, &c.

For the following interesting paper we are indebted to the courtesy of John Harland, Esq., the indefatigable Secretary of the District Agricultural Society. It was drawn up in the early part of last year, and addressed to the office of registration and statistics in connection with the government, at Montreal. The idea is an excellent one, and we could like to see the plan carried out in greater fulness and detail in reference to every district in the province. A large mass of useful information might thus be collected, which when subjected to careful revision and classification, and published in an acceptable form, would throw an interesting light on the vast capabilities of the country, and be the means of improving the character of the emigration to this most important section of her Majesty's dominions. The real condition and natural resources of Upper Canada are but very imperfectly understood at home; and but little has hitherto been done in the colony, of a character to command public confidence in imparting those kinds of information which intelligent and respectable emigrants require. We have of late had pretty ample opportunity of ascertaining the views of our leading agriculturists on this subject, and there seems but one opinion, that the Provincial Agricultural Association should publish an annual report, embodying whatever is important and useful in regard to agriculture, manufactures and the mechanical arts. This object might be accomplished by securing the co-operation of the secretaries of the various agricultural societies already in operation in every part of the province; and we cannot for a moment

doubt that government would liberally assist the society in the prosecution of so valuable a work. In the mean time we shall be happy to publish information of an analogous character to that contained in the following article, to whatever districts it may relate.

The Wellington District is one of the newest and largest districts in the province of Upper Canada, extending from north to south about one hundred miles, and from east to west, at its widest part, about sixty miles; it commences within fifteen miles of Lake Ontario, and terminates at Owen's Sound, on Lake Huron; it comprises twenty seven townships, each of which may be considered equal to three or four English parishes. The climate, although decidedly healthy, is nevertheless very variable, the transitions from great heat to intense cold being extremely sudden, and there is not perhaps one month in the year in which some part of the district is not visited by frost.

The soil in so large a district must of course be various: the township of Puslinch is gravelly, Waterloo is sandy, Wilmot is clayey, Guelph consists of a deep black loam, and the same may be said of all the other townships, except those near to Owen's sound, and they are gravelly. Generally the soil may be considered extraordinarily fertile, and highly favourable for cultivation, the land being neither very hilly, nor yet very flat, but may be termed rolling, and affording excellent natural drainage—a circumstance which in a new, and consequently poor country, is of great consideration and advantage. The water is very pure and plentiful.

Property is generally held in lots of one or two hundred acres, and there are in the district about three thousand freeholders.

The quantity of land cultivated by individual farmers, varies according to the time which the respective townships have been settled: in Waterloo, for instance, which was settled by a company of Dutchmen from Pennsylvania, about half a century ago, the farms may perhaps average one hundred and twenty acres each, whilst in Guelph, where only about twenty years have elapsed since the first tree was cut, the average size is probably not more than twenty acres.

In buildings, a great improvement is in progress in the older townships, where the barns are already very excellent, and the original log houses are giving place to frame ones, and in many cases to those composed of the more substantial material of brick or stone.

With respect to implements, it may be remarked, that the carriages appear to be well adapted to the circumstances of the district, but the ploughs and harrows have hitherto been of a wretched description. Since the establishment of the Agricultural Society, however, some very superior ploughs and harrows have been introduced, and it is reasonable to suppose, that in the course of a very short period, the original description of Canadian plough or harrow will be remembered amongst the things which were.

Fences are almost entirely composed of rails, placed in the zig-zag form; in many cases, however, considerable improvement has been made in their construction, by placing the stakes at the corners perfectly upright, and securing them at the top by a cap; by this means they occupy less ground, are much stronger, and are more durable and slightly than when made on the original plan.

It would be impossible to describe the management of land here, for perhaps scarcely two farmers manage alike. The land, as has been previously remarked, is exceedingly fertile, and its owners, in the first instance, took very unwarrantable liberties with it, in many cases taking two crops of wheat without ploughing at all; and although they would profess to plough for the third crop, yet they would scarcely raise sufficient soil to cover the seed, which was harrowed in the most slovenly manner possible. By persevering in this system for a few years, it is easy for any one to conceive, that the land would become so foul as to render it impossible for any one to plough it at all; consequently a little grass seed was scattered over it, and it was then left to itself, affording a scanty subsistence to a few sheep, until the farmer had served all the rest of the land which he was yearly recovering from the forest in the same manner; he would then find it necessary to return to the piece originally cleared, and as the stumps would by that time be nearly decayed, he would attempt to bring it into something like cultivation, but would nevertheless declare that he would rather chop and clear a piece of land than he would summer fallow a piece of the same size. There are, however, persons who have kept their land in good cultivation from the commencement; and farms may be seen in the townships of Guelph and Eramosa, the management of which would do no discredit to the agriculturists of Norfolk, Northumberland or the Lothians; but they, it is to be regretted, form only exceptions to the general rule. It is cheering, however, to witness, that within the last few years the tide of improvement has set in, and as a great portion of the farmers are not only highly intelligent, but very energetic, it may reasonably be expected to flow on in a continuous course.

The kinds of grain sown here are wheat, barley, peas and oats, and on some of the poorer descriptions of soil, rye is cultivated. Fall or winter wheat is by no means a certain crop in the new townships, being frequently killed in the winter, or if it escapes that disaster, it is very liable to be destroyed by rust in the summer. *Spring Wheat* may be considered nearly a certain crop, and is consequently much more extensively cultivated; and in consequence of the emulation amongst the farmers, created by the Agricultural Society, the very best kinds are eagerly sought after, and cultivated with great success—thirty bushels to the acre is not considered by any means an extraordinary crop, and sometimes forty-five bushels per acre have been produced. Orchards are much cultivated in Waterloo and a few other of the older townships, and in some years yield an abundance of fruit; but in other seasons, when they have born equal promise, the

district has been visited by a frost, which has nipt them in the blossom, and not a vestige of fruit has been produced. This circumstance has doubtless prevented orchards being so extensively planted, as would otherwise have been the case.

Gardening is not much followed here as an occupation, but specimens of onions, carrots, parsnips, turnips, beets, asparagus and celery, have been produced at the exhibitions of the Agricultural Society, of a quality perfectly astonishing. The live-stock here, i. e. in and about the township of Guelph, may be considered equal, if not superior, to any in the province. The horses are stout, active and hardy. The horned cattle are strongly impregnated with the blood of the short horns, a large herd of which were some few years ago imported by Rowland Wingfield, Esq., and were sold by him to Mr. Howitt, a gentleman of large property, residing at Guelph Grange, who takes great care to preserve the purity of the breed, and who has indeed carried off a very great proportion of premiums from the two great provincial exhibitions which have been held at Toronto and Hamilton.

A great number of Leicester and Southdown sheep have been brought here from England, and have effected a great improvement upon the original stock. An exceedingly fine breed of hogs have also been brought here from England, and for this description of animals, Guelph is highly celebrated, numbers of them having been sent alive from hence to nearly every state in the neighbouring union; and it is not an uncommon circumstance to see hogs here which at the age of one year will weigh nearly if not quite four hundred pounds; and at the age of eighteen months, weighing nearly six hundred pounds. The pure breed is chiefly in the hands of Mr. John Harland.

The roads here are in a bad state, and as the distance from the centre of the district to the lake is great, may be considered one of the greatest evils which the farmers have to contend with; they are, however, in an improving state, and it may be hoped that before the lapse of many years, access to the market may be had at all seasons.*

An Agricultural Society was established here about seven years ago, and is under judicious management, and has effected an immensity of good; it at present consists of 533 members, and during the last year, distributed 540 premiums, amounting to 326*l.* 5*s.*, and for which 1567 articles were entered for competition.

TO CURE SWELLING OF THE THROAT IN HOGS.—In order to contribute to the usefulness of your valuable periodical, and to inform the public of what I find from experience to be an infallible cure for a certain disease with hogs, viz.: the swelling of the throat, I herewith send you a recipe for the disease, with a desire that you

* A good Macadamised road is now in course of making between Dundas and Guelph, which is expected to be completed next year, and which will be of great benefit to the country through which it passes. Most of this district abounds with good road materials, gravel and stone. North of Guelph, there are several miles of excellent gravel road. [ED. OF AGRICULTURIST.]

publish the same in your work if you deem it of any import, and the same meets your approbation.

Take of molasses half a pint, and a tablespoonful of hog's lard; to this add of brimstone a piece an inch in length. Melt it over the fire, and when cold or in a liquid state, drench the hog with it; and nine times out of ten it will be found to have the desired effect. My hogs were affected with this disease during the past year, and I found the above to be effective when all things else failed.—*Farmer's Register.*

ON PRACTICAL FARMING, ROTATION OF CROPS, MANAGEMENT OF STOCK, &c.

(Communicated to the Johnstown Agricultural Society, by John Bland, Esq., Brockville.)

(Concluded from page 203.)

MANAGEMENT OF STOCK.

1st, Horses; 2nd, Cattle; 3rd, Sheep; 4th, Swine; 5th, Miscellaneous Stock.

HORSES.—The form of a horse adapted to agriculture has been well described by Culley, a writer of great experience, in the following words: "His head and shoulders should be as small as the proportion of the animal will admit; his nostrils expanded, and muzzle fine; his eyes cheerful and prominent; his ears small, upright and placed near together; his neck, rising out from between his shoulders, with an easy, tapering curve, must join gracefully to the head; his shoulders, being well thrown back, must also go well into his neck (at what is called the points) unperceived, which perhaps facilitates the going much more than the narrow shoulder. The arm, or fore thigh, should be muscular; and, tapering from the shoulder, meet with a fine, straight, sinewy, bony leg, and full at the girth; the loin or filets broad and straight, and body round. The hips or hooks by no means wide, but quarters long, and tail set on so as to be nearly in the same right line as his back. His thighs strong and muscular; his legs clean and fine boned; his leg bones not round, but what is called lathy or flat." Now, as to their management.

Breeding and Rearing.—This is of much importance, and care should be taken to have our animals in good health and condition. The mare should be at least four years old before you introduce the stallion to her, and the season arranged, so that the foal may have the benefit of the grass in May. Mares kept for breeding alone, should be covered from the ninth to the eleventh day after foaling; and it is a good practice to take her to the horse again, nine or eighteen days afterwards. Mares should be, when with foal, attended to with a little extra care, and less burthened or worked than others. Attention to this will improve the stock. The colts should be permitted to have any exercise they may take, and not allowed much exciting food, as oats beans or peas, but rather such succulent food as potatoes, carrots, ruta бага, &c. At two years of age, they may try the light harrow; and at two-and-a-half, plough on a light soil, and so till four, or even longer, when they should become fit for all reasonable uses.

Castration is commonly performed on males

when one year old, but many prefer to do this when only one to three weeks old, or as soon as the testicles come down, or as circumstances warrant. Finally, to have your horses in good and healthy condition, be liberal with your curry-comb and brush twice a day; frequent but moderate meals in due proportion of succulent and solid food, and abundance of clean straw. Some consider good dressing more conducive to health than liberal feeding. A common saying in England is, that it is equal to half their food. When duly and properly attended to, the most satisfactory results are formed; and when you consider his spirit, courage and patience, and noble endurance under fatigue and burdens—nay, even under neglect, you will be compelled to be grateful to him for your personal interest. It is recorded of the Russian couriers, in travelling from Petersburg to Tobalsk, distant 19 deg. 26 min., that they journey from 95 to 110 miles per diem, on one horse; also will and do bear on their backs 300 to 350 lbs. The dragoon horse carries, including his rider, arms and baggage, 340 lbs., and when fully appointed, 350 to 370 lbs; indeed their capacity is capable of bearing 1000 to 1400 lbs.

CATTLE.—Much importance is prudently attached to the proper breed of cattle—hence the choices of both males and females: on the former, more care is generally bestowed, and always with the most satisfactory results. Care should be extended to the female during pregnancy; say that they be well fed, and not subjected to rough treatment or ill usage. The next object is to fatten cattle for our markets; and as we are now to have fairs established in our district town, it is likely we shall get more encouragement for good cattle. It is well known, that the most likely to bring a good price, are such as are in the best possible condition; hence those that are fat, for it is well established, that the lean meat of all fat animals, is better flavoured and more nutritive than that of poor ones. To overtake this, in the best and shortest way, is stall-feeding. Keeping the animals quiet, dark—fed often rather than liberally. Turnips with cabbage, if possible, then carrots or potatoes; and lastly, Indian corn or barley-meal, or bruised beans or peas, varied several times a day, and boiling these latter two or three times a week. Salt daily, but little of it. Clean water twice a day, and not in very great quantities. Cattle, to be fattened most easily and profitably, are well-known to be middle-aged; either too young or too old is bad management. It is also well known, that the male should be altered, and the female spayed, otherwise the flesh is always inferior and ill-flavoured in comparison. Cattle attain their full growth generally in about five or six years; sheep and hogs at two years.

Breeding.—No exact rule can be well applied, but general practice seems to sanction the following:—Bulls are admitted to cows when two years old, and if good stock-getters, are allowed practice till nine or even twelve years. Three years of age is better for the females, as the stock most commonly shows. The period of gestation with cows averages forty weeks. The calf which may be in strength, is allowed a week to suck its dam.

After that, skim-milk can be gradually given in lieu, with other suitable nourishing food.

The Dairy next calls our attention, and is of paramount importance, as the regular demand for butter and cheese exhibit. Too little consequence has been attached to this, and I would impress upon all, the liberal reward that awaits those who will devote more time and care to these two important necessities of life. To churn *well*, is to do it regularly, neither too slow nor too hurriedly. A deviation from this is highly injurious—hence a moderate and continued agitation which ought not to be interrupted. If hurried on violently, the cream is heated, which yields a white and curd-like butter. Press well with a wooden spoon, and wash carefully in clean and cold water. A very small quantity of salt, dry and well pulverized, mixed equally, is good practice. Print or roll it for market; otherwise, if to keg it, be a little more liberal with Liverpool salt—hence ready for sale. Next—

Cheese Making.—Rennet, or calf's second stomach, is used generally for turning the milk. This must not emit any strong or disagreeable flavour, else it will communicate its taint to the curd. Take of this the size of a dollar; put it in a tea-pot with some salt, and pour in a quarter of a pint of boiling water. This will be rennet enough for nine or ten gallons of milk. When such a number of cows are kept as to yield milk sufficient for a cheese of middle size at every milking, the milk is passed through a sieve to remove impurities, into a tub, and formed into a curd by a mixture of rennet. As this is required to be kept to the same heat as when it came from the cow, it is necessary to pour a quantity of warm water into the curd tub; otherwise, when fewer cows are kept, the milk is stored in coolers, three or four inches deep, till sufficient is collected to make the size wanted. When the cheese is to be made, the cream is skimmed from the milk in the coolers, and without being heated is passed through the sieve along with the milk drawn from the cows at the same time into the curd tub, and the skimmed milk, being heated to the heat of new milk. Pass all through the drainer. The whole is coagulated by rennet, and carefully mixed with the milk. The cream is now put into the curd tub cold, that its oily parts may not be melted. Keep your milk cool when drawn from the cows; put in a little cold water to raise the cream. It should be kept at a temperature of 55 deg. Fahrenheit. If higher, it will not cast up the cream so well, and will likely very soon become sour. It is said to be owing to the milk being allowed to cool too much before it is coagulated, that it becomes difficult to form it into cheese in winter; hence cheese made at that season is so soft and tasteless. When the milk is coagulated, draw off the whey instantaneously, and to expedite its separation, the curd is broken and cut with a knife. Next the curd is put into a drainer again, cut and pressed, to expel the whey completely. It is now broken small, intimately mixed with salt, and put into the cheese press with a thin piece of canvas round it; it is well pressed till the whey is wholly extricated, and the cheese

formed. It remains in the press one hour, and is afterwards taken out, and again replaced three or four hours, getting a dry cloth and its position reversed each time. Half an ounce of salt is said to be enough for every pound of cheese. When brought out of the press, expose them to a considerable draught in a cool room, turning twice every twenty-four hours. In a week, twice only will do. Armatto or saffron is used for colouring cheese; either will do, but the latter probably is the better—some say it is an improvement. Keep your cheese now carefully, turning the same regularly, the larger, the harder and more valuable it becomes.

SHEEP.—The varieties of sheep are very numerous, and are still more than cattle exposed to all the influence of soil and climate. I shall, however, confine myself to those of Spain and England, as being best known and appreciated in our colony, because in them are best united the two great objects for which this animal is reared—viz., its wool and carcass. The two races above mentioned have been judiciously mixed, hence the produce of the carcass has been much improved as well as the fleece. The average weight of the latter may be six to eight pounds, and of the former eighteen to twenty and twenty-two lbs. These should meet the attention of our farmers, as being well adapted for our climate. It is of much importance to keep your sheep excluded and free from all harm or alarm, as they fatten much better, and in every respect sooner than otherwise.

SWINE.—This is a valuable species of stock to a farmer, and will continue to be more so, if the lumber trade maintains its present standing. This is more likely, from the great consumption now existing at home by railways, &c. A very excellent kind of breed seems, and justly, to obtain a good standing in the Berkshire, from the reason of being more easily fed, and acquiring a large bulk and weight in a short time. Some wonderful specimens of this have been produced, say from 10 cwt. 2 qrs. 10 lbs in weight; measuring from the nose to the end of the tail, 3 yards, 8 inches, and height 4 feet 5½ inches. Other approved breeds are well known among us, but a mixture of this breed is very generally diffused, from its known qualities. The mode of breeding, the food and general management of swine, are all dependent on local circumstances, so much so that it would be little use to dwell on the subject. The period of gestation with swine is sixteen weeks. Pigs are weaned at six weeks old, soon after which the sow is again in season, so that two litters are generally farrowed in one year. February and August are the best months for parturition, as the young pigs are tender, therefore the sow should never be allowed to farrow in winter.

MISCELLANEOUS STOCK.—Say poultry, bees, pigeons, &c. The first is perhaps the only kind worthy the farmer's attention. The most difficult to rear, voracious, and unprofitable is the turkey. Geese, which live on grass, are more valuable, and give little or no trouble. Ducks are not only harmless, but feeding principally on pernicious insects, are probably deserving of more attention

than they have yet met with. But common fowls are the best and most profitable stock, and add a good deal to the income of the good housewife, for the eggs and chickens she can always take to market. A little care and attention to feed and protect the common farm-yard hen, and her return is very numerous. A few boiled potatoes mixed with a little meal, and plenty of clean water, is all that is required. A warm shelter in winter is good management.

FLAX CULTURE IN OHIO.—In the immediate vicinity of Delaware, on rising a point of land, from which we could see the waving fields of grain some miles distant, the effect produced on our minds, having been raised in a district of country noted for its beautifully undulating lands and superior cultivation, was of the most pleasing nature; and what made this feeling additionally strong, was to view a great number of fields of flax in full bloom, a crop which we have cultivated largely for many years past. The soil in the neighbourhood of Delaware, is well adapted for the cultivation of flax, but to appearance, the farmers are totally ignorant of the proper method of preparing land for this crop. Flax ground should be brought to the finest possible state of tilth, and the seed should be sown at the rate of two bushels per acre, about the first week in April, or when the plum blossoms make their first appearance. We have frequently grown as high as 25 bushels of flax seed and 500 pounds of clean scutched flax per acre, extending over an area of from fifteen to forty acres. The flax ground near Delaware, could not have been ploughed more than once; three pecks per acre must have been the utmost quantity of seed sown, and the period of sowing must have been delayed at least three weeks later than it should have been. The result of this wretched system of management is perfectly obvious—ten bushels of seed will be the outside average, and the fibre is worthless for manufacturing purposes. Worse than all this, the ground by being only partially covered with plants, and they of a stunted growth, becomes covered with weeds, and is in a worse state of cultivation, than previous to its being sown with flax. Whereas if sown upon moderately rich land, and the directions above given followed, it would have proved a smothering crop to most descriptions of weeds.

The heaviest crop of clover, that we ever saw grown, the seed was sown on flax ground, at the rate of eight pounds per acre. The pulling of the flax plants, loosened the ground around the roots of the young clover plants, which in connection with a top dressing of gypsum, at the rate of one bushel per acre, as soon as the crop of flax was removed off the ground, promoted a growth of young clover plants, the first season, that perfectly astonished all those who saw it. If land be naturally too rich in decayed vegetable substance, a crop of flax taken from the ground as a preparative crop for wheat is calculated to lessen the chance for rust, besides the ground if well prepared for flax, and two bushels of seed be sown per acre, will be in better condition for wheat than would be the case, if subjected to the expensive process of summer fallowing. A well cultivated crop of corn, would in most cases be a superior preparative crop for flax, which could be either followed in succession by clover or wheat, as the judgment of the farmer would dictate, or the quality of his soil might require.—*Ohio Cultivator.*

Messrs. Howe and Butler, of New York, have invented a machine entirely to supersede cutting clothes with shears. Two men can do the work of fifty with it.

Horticulture.

ROSEBANK NURSERY, AMHERSTBURGH.

We beg to call the attention of our readers to Mr. James Dougall's advertisement on another page. His collection of fruit trees, shrubs and flowers, is very extensive; and from the well-known attainments of the enterprising proprietor, both in the science and practice of his profession, all articles sent from his establishment may be safely relied upon for being correctly named and of genuine character. Many of the fruits raised by Mr. Dougall may be seen growing in a state of maturity in his extensive orchards. A sense of duty alone impels us thus to make honourable mention of one who has done much to advance both the agricultural as well as the horticultural interests of Canada.

THE LONDON HORTICULTURAL SEASON having now closed with the great Exhibition at Chiswick, on Wednesday last, the time has come for making a few general remarks in anticipation of future years. To our minds, the evidence of advancing horticultural skill, afforded by the Chiswick meetings, is most satisfactory. It may be true, that nothing has been produced more remarkable, as an example of high cultivation, than has been seen before; perhaps in some things skill can go no further. It is possible that individual cases of better gardening might be pointed out in former years; but what is far more important is the fact, that in no season has so little appeared of inferior quality. It has become as rare to find ill-grown plants in the exhibitions at Chiswick, as it once was to find them well grown. Things of which a head gardener would have been proud some twenty years ago, his apprentice would be ashamed of now. This alteration must be admitted to be immense gain; it proves, that although progress may in some particulars be arrested, it is upon the whole in vigorous and rapid march.

Nor can it now fall back. In the onward flow of the arts of civilization, there is no ebb; there may be eddies, and rapids, and bars, and shallows; and gales may for a moment force back the advancing flood, but such obstacles are soon overcome, and the mighty stream glides on with a force that accumulates as the volume augments. Against the return of gardening to its former state, we have this security, that the taste of the public has kept pace with the improvement of the profession. The employers of gardeners have become fastidious; what they would have admired in 1800, and endured in 1820, they now scout. A striking proof of this was afforded on Saturday, by the remarks of the visitors, who chanced to spy some unhappy grapes which an innocent country gardener had produced as a sample of his skill. The grapes were not so bad: we have seen far worse gain prizes; but the lookers on refused to endure them, because they have become accustomed to what is infinitely better. Visitors to these exhibitions come not only from every quarter of the globe, but from every hundred in England, perhaps from every village; they see what gardeners can do; they hear that the best results are often obtained by men with no better means than their own; and they return to their homes determined that there also really good gardening shall be introduced.

That is the security against the art of horticulture falling back to its ancient level.

The quality of the plants exhibited is not the only matter in which the public taste is changing; and it is as well to point out what direction the change is taking.

What are called large collections of plants have ceased to be popular. Admirable as have been the specimens shown under this denomination, visitors no longer crowd around them. You hear the passers by exclaim, "how fine! how lovely! What a capital garden Mr. — must have!" and that is all. The tents are deserted for a more attractive display. Nevertheless there are crowds around the "small collections;" although made up of similar plants, they have not lost their interest. The reasons of this we take to be several. In the first place there is little or no competition for the "large collections." One or two leviathans swallow all the minnows. In the next place the small collections are more varied, more choice, and are moreover for the most part composed of smaller specimens; to have a chance of winning in them, everything must be at least on the borders of perfection. Insufficient competition in the larger groups produces the contrary effect.

A similar indifference is manifested yearly towards heaths. They are in themselves among the most beautiful objects in the greenhouse; great success in growing them shows great horticultural skill; and the detached branches, or solitary bushes, amidst other plants, excite everybody's admiration. Nevertheless the heath tents are generally almost empty. This we take to be caused by the monotony of the form of heaths, and the entire absence of a graceful mode of growth. Groups of them have no picturesque effect. The flowers indeed display all the tints of red and yellow and white; the foliage is of the purest green; the blossoms are of greatly varied shape; and yet the plants have an uninviting sameness. The flowers are all tubes, the leaves are all narrow, and the general form of the bushes is so round that a person ignorant of their nature might imagine them to be relics of the clipped hedges of our ancestors. In fact a row of finely-grown Hottentot heaths is like a line of Hottentot Kraals. This is fatal to masses of such plants exciting pleasurable emotions in a crowd of lookers on.

It is because they are so entirely the reverse of this that the orchids fascinate everybody. Where they are, and where roses are, the crowd is greatest: it is thither that the earliest visitors invariably resort, and there they linger. You never find the tent of orchids deserted. Men say that it is because of their singular forms, and their aromatic fragrance; but we believe that the explanation is chiefly to be found in their graceful outlines and infinitely varied aspect. It is as difficult to give sameness to a bank of highly cultivated orchids as it is to throw variety into a line of Cape heaths.

New plants are becoming less numerous. They scarcely appear; indeed, except from the great house of the VEITCHES of Exeter, or from the garden of the Horticultural Society. But, on the other hand, there is the satisfaction of witnessing every now and then the reappearance of some old plant as good as new. Let us hope that we may see many more such cases. When, at the end of the last century and beginning of this, the horticultural *furore* began to tell upon the English mind, people could not grow the plants that merchants brought them. They were flowered, named, indifferently represented in botanical periodicals, starved to death, and forgotten. But among the casualties of those days were many beautiful creations, the names of which stand in our catalogues as so many records of horticultural unskilfulness. Because they flourished anno Domini 1795 they are set down as "old things," and, like other old things, are no longer cared for. From the way in which these plants are treated, one would think they possessed the attributes of humanity. We can, however,

give an assurance that plants, at least, are none the worse for being old, and that the public sustains no small damage for entertaining a contrary opinion. This was shown by Mrs. Lawrence's charming *Relbania squarrosa*, which, although born near London in the year 1774, was the youngest and prettiest plant in that lady's collection on Wednesday last. For ourselves, we incline to class old plants with old wine and old nobility.

These are points which exhibitors would do well to think upon.

Concerning Wednesday's meeting, we shall only add, that the day was beautiful, the gardens at Chiswickhouse delicious, and the exhibitions of fruit and flowers the best which has yet been seen in July. The fruit-growers vindicated their claim to rank with the cultivators of flowers; very little was of inferior quality, a great deal was excellent, and some was admirable. As to the strawberries from the garden of the Right Honourable the Speaker, it was admitted by the best judges that no such British Queens and Eleanors had ever been seen before.

The number of visitors was 7338.—*Gardener's Chron.*

CULTIVATION OF THE PANSY.—The following is a Lancashire method, which we believe has been practised successfully for twelve years:—The soil best suited for the pansy is three parts good loam, two of rotten cow dung, one of bog soil, and one of sharp sand, with a little wood ashes, mixed together, and left in a heap for at least three months. Care is taken, before planting in the beds prepared of this soil, to wash all the soil away from the roots of newly received plants; for, if different, and the pansies had to grow in it for some time, it would have a tendency to deteriorate the other soil. Divide the roots into as many plants as practicable, taking care, however, that each stem has roots, otherwise it will be only a cutting, which demands different treatment. Press the soil firmly round the roots at planting; water abundantly with a can, provided with a very small rose; protect from the sun by means of a mat, without, however, a total deprivation of light and air; and keep the plants thus protected for a week. In order to prevent the pansy from degenerating, two beds are to be made in a year from *cuttings*. The side-shoots are to be taken for this purpose in preference to the centre ones. The centre shoots appear stronger, but they seldom succeed in striking, the stem not being solid, and the back too hard. The short shoots at the head of the plant, with the back almost white, will strike quickly. These cuttings should not be longer than 2 or 2½ inches; and they should be carefully cut just below a joint. This is very important, for if a long piece be left below the joint it will rot, and cause the loss of the plant. The leaves must be carefully removed an inch from the bottom, without injuring the back of the stem. The proper time for this operation, in our (Scotch) climate, is *now*, for summer and autumn flowering; and at the end of August or beginning of September for next spring. Cuttings must be struck in the bed they are intended to flower in; planted from six to eight inches apart; the soil pressed firmly round them; watered abundantly, and protected from the heat of the sun for a week or ten days, or, if the weather be hot and dry, for a longer period. But, if possible, rainy weather should be selected for the operation. Cuttings strike much more surely in rainy and cloudy weather. The same bed should not even be used twice without adding fresh, and turning the old soil over. A single bed of cuttings, made in August, will flower all the next year, it is true, but long before its termination will be found to produce nothing but bad-shaped and worse coloured flowers. The blossoms will not, even with two beds in the year, always come true. They are apt to run; the best pre-

ventive whereof is protection from the mid-day sun, and not suffering the shoots to get too long, but heading them back, and making cuttings of the pieces. Straw or hay laid between each row and close to the roots, best protects the pansy from frost. The wire-worm, slug and snail require to be sharply looked after.—*Scottish Agricultural Journal*.

WATERING GARDENS AND CROPS. BY JAMES LOTHIAN.

During the greater portion of summer, the British gardener is considerably employed in watering, especially flowers and plants; but not perhaps in any case to the extent that would prove most beneficial; and, although strongly recommended by almost every author who has ever written on gardening (with exception of some of the market gardeners near London), the subject has scarcely received notice beyond what dire necessity has compelled. Fruits and vegetables, during drought, are benefitted in a most powerful degree by copious waterings; and although some may have held forth the contrary, whenever a defect may have occurred, it is only where unfair watering has been practised, which no doubt does much more harm than good; but wherever applied freely, and particularly when holding ammonical substances in solution, the benefits accruing are as great and certain, not merely in accelerating more abundant produce, but in preparing the land or soil for future crops. It is clearly evident that as yet the process of watering, in the majority of gardens, has been but little attended to, and that little perhaps with much labour and expense—the young men having often to draw water, in some instances not very attainable, from the hot-houses, or some remote part of the garden or grounds, in order to water plots and quarters in dry weather, such as we generally experience during June, July and August. Being moreover often—nay generally and perhaps unavoidably—done after hours, it is very imperfectly performed; and it is very well known that in this manner much valuable time is lost, going for and returning with water, while any advantage derived may be small and partial, which may have led some to condemn the process of watering entirely, without ever giving it a fair and judicious trial.

In lieu of carrying water, as commonly done, from one end of the garden to the other, or from somewhere outside, might be proposed the sinking of four or more tanks, in different suitable parts of the garden, each of which could be supplied with water from the nearest river or fountain-head, by means of proper drains of tile or brick, and leaden pipes, placed a proper depth below the surface; such cisterns or tanks could be made, if desired, at the same time, ornamental. They might be of stone or wood—if the latter, previously steeped for some time in a solution of *sulphate* of copper, which would render the wood as durable almost as stone itself—or, if preferable, very large barrels or hogsheads might be used, into which could be affixed a pump or tube, with an efficient grating at the base or bottom, to prevent any filth ascending the tube to the large rose fixed on a leathern pipe, the latter to be moveable, or otherwise joined to the leaden tube, and taken from it at will, and at the same time similarly fixed on the leathern pipe. The water conducted into the tank might be regulated by means of a cock, and that supplied from this source, and diffused over the crops and quarters of the garden, by another. Should any manures be steeped in such tanks—for instance, pigeon dung or guano—it would form the thing complete, by fixing a filter half-way (or rather more) towards the bottom of the tank. On this system, one person, and in much less than half the usual time, could water the entire garden, and with much less labour to himself, having only to conduct the rose attached to the leathern pipe, while the grounds and crops

would receive a complete saturation; any outlay in such tanks would be repaid in one season, or two at most, by the saving in time, wages and production of abundant and heavy crops; and I feel almost as certain, could be brought or rendered as applicable in the field as in the garden.—*Scottish Agricultural Journal*.

FLORAL CLOCK.—It is pretty generally known that flowers themselves may be made to form a horologe.

"There is," says Professor Balfour, "a periodicity in the hours of the day at which some species open their flowers. Some expand early, some at mid-day, others in the evening. The flowers of succory open at 8 A.M., and close at 4 P.M.; those of *Tragopogon porrifolius* or *Salsify* close about mid-day. Linnaeus constructed a floral clock or watch, in which the different hours were marked by the expansion of certain flowers. The periods however do not seem to be always so regular as he marked them at Upsal. The following are a few of those horological flowers, with their hours of opening:—

<i>Ipomoea Nil</i>	3 to 4 A.M.
<i>Tragopogon pratense</i>	4 to 5 —
<i>Papaver nudicaule</i>	5 —
<i>Hypochaeris maculata</i>	6 —
Various species of <i>Sonchus</i> & <i>Hieracium</i>	6 to 7 —
<i>Lactuca sativa</i>	7 —
<i>Specularia Speculum</i> }	7 to 8 —
<i>Calendula pluvialis</i> }	
<i>Anagallis prostrata</i>	8 —
<i>Nolana prostrata</i>	8 to 9 —
<i>Calendula arvensis</i>	9 —
<i>Arenaria rubra</i>	9 to 10 —
<i>Mysembranthemum nodiflorum</i>	10 to 11 —
<i>Ornithogalum umbellatum</i> (<i>Dame d'onze heures</i>)	11 —
Various Ficoideous plants	12 —
<i>Scilla pomeridiana</i>	2 P.M.
<i>Scilene noctiflora</i>	5 to 6 —
<i>Oenothera biennis</i>	6 —
<i>Mirabilis Jalapa</i>	6 to 7 —
<i>Cereus grandiflorus</i>	7 to 8 —

RHUBARB CULTIVATION.—The red Goliath rhubarb is one of the best of the hybrids for culinary purposes, and as superior to the old harsh, dock-like rhubarbs which were generally prevalent even ten or eleven years ago, as our cultivated celery is superior to the rank weed of the same name which grows by muddy ditches. It is as easily propagated as any other perennial vegetable; and so hardy as to resist the frosts and vicissitudes of our severest seasons; and of all the esculents for pies and tarts and puddings, it is the most easily prepared. It is so prolific too, that half a dozen roots would keep a small family constantly supplied, during four months of the year, that is, from the beginning or middle of April, according to the forwardness or backwardness of the season, until the beginning or middle of August; and it is sometimes preferred to all other vegetable substances for the purpose of pastry, throughout the summer, even where fruits of every kind abound. Stalks of the red Goliath rhubarb have been known to measure six inches in circumference and nearly two feet in length, so that only one of them was required for a pudding. So delicate and soft too, is its texture, that as soon as it arrives at the boiling point, it becomes a fine pulp, and is already sufficiently cooked. As a garden production for culinary purposes, it is certainly of much value, being in perfection precisely at that season when apples become tough and scarce, and before gooseberries have made their appearance. Its flavour is so delicate, that it ought not to be mixed with any other ingredient than sugar; and on no account should it ever be peeled. The eyes or

buds of the red Goliath rhubarb have a deep rich red colour; its leaves are of different hues of green; and its stalks have a green ground colour, spotted and streaked with red. Its leaves are of enormous size—sometimes four feet long and three-and-a-half wide; its roots also are gigantic—so large that, in the course of three or four years, a single root, when dug up, would fill a wheelbarrow; hence the plants require a wide space—say five feet every way, or five feet by six. Either this hybrid or any other kind of culinary rhubarb may be propagated from seeds, or from young roots of one year's growth, or from clean offsets with each two or three bold eyes. The soil should be rich, and may be prepared in the same way as for asparagus beds. Seeds may be sown either somewhat thickly, with the view of the plantlets being transplanted in a few weeks, or at wide distances and in regular rows, with the view of the plantlets being merely thinned out and allowed to remain permanently when raised. The sowing may be done in September or October, and the final thinning toward the close of the following summer; and intermediate cleanings and hoeings must be given in spring. Roots or offsets may be planted in March, in dry weather, in an open state of the ground, and during a temperate state of the atmosphere. Plants from vigorous roots may be available for use so early as four or six weeks after planting; but, generally, plants from offsets ought not to lose a stalk or a leaf, except by natural decay, till the following year. When the growth of transplanted rhubarb or of plants from offsets becomes established, the ground must be kept free from weeds; and if dry weather supervene, water ought to be given freely around the roots two or three times, at intervals of four or five days. In ordinary culture, nothing further is done, except to manure the bed in autumn after the leaves have decayed—and even the waterings in a time of drought are not attended to; but in more refined culture, some special methods are used for promoting luxuriance, succulency, flavour and blanching. In autumn, the decayed leaves are laid in little trenches, formed along the centre of the space between the rows, sprinkled with a handful or two of salt, and covered with the earth that had been dug out; as the winter approaches, a coating of well decomposed stable-manure or leaves, or a mixture of both, two or three inches deep, is laid round each plant to the extent of two feet; and in the open weather of February, or before the new growth appears, the whole bed is forked over, and a mimic mound of drift sand, or of light porous earth, or of the soil in the central space between the rows, is formed to the thickness of a foot over each plant,—and this mound must be removed as soon as the season of pulling or of cutting ceases. When the red Goliath is gathered for use, the stalks should never be cut from the bed, but wrenched sideways with a sudden twist, and they will then come away entire from their junction with the root,—round, flat, clear, and as white as milk. As soon as the growth of rhubarbs of two or at most three years old becomes vigorous, the flower-stem begins to ascend from the root-crown of each plant, and this will readily be distinguished from a leaf-stalk and ought instantly to be pulled away, except from some one plant which is intended to produce seed; and this plant should be less gathered from than others, or not gathered from at all, during the season,—and must not by any means be subjected to the bleaching or mould-covering method in spring. The seed should be gathered as soon as ripe; and care must be used that none of it be scattered over the beds; for young plantlets from it might grow up unobserved among the old plants, and greatly rob their of their spreading-room and nourishment.—*Rural Cyclopaedia*.

The deeper the soil is made, the deeper will the roots go in search of food.

Mechanics and General Science.

SCIENTIFIC NOTICES.

NO. IV.

THE INDIAN SUMMER.

It is scarcely necessary to enter into a full description of the peculiar appearances which characterize that varying portion of the year known in this country by the name of Indian summer. Old residents on this continent have had frequent opportunities of observing the phenomenon in perfection, while new comers may probably have been fortunate enough, within the last few years, to have observed two or three days so entirely different in character from all the rest of the year, as clearly to entitle them to the above appellation. In former years, this late summer, which generally occurred about the beginning of November, and consequently after the cold had begun to set in, lasted for several days, or even for two or three weeks; but at present, at least in our neighbourhood, we seldom see more than a day or two, and even then, the phenomenon is so slightly developed, that it is difficult to determine whether it is a real Indian summer day, or only a warm autumnal one. As I said before, it is not necessary to describe the peculiar appearances, for they are precisely similar to those that are observed during the dry fogs of Europe, with this addition, that the weather is to all appearances much milder.

The name Indian Summer, seems to have been given to this period, from its being the time when the Indians were accustomed to start on their hunting expeditions, and it usually follows immediately after those cold rains which are commonly observed about the middle or end of October. The temperature of the day appears warmer than might be expected at that season of the year, probably from the stillness of the air, but it freezes during the night, and the mean temperature of the twenty-four hours is therefore not abnormal.

A somewhat similar phenomenon is frequently and almost regularly observed in some parts of Europe, as has been shewn by Dr. Mahlman; it is, however, of much shorter duration, and more variable—a circumstance not to be wondered at, when we consider the exceedingly variable climate of that continent.

Various theories have been proposed to explain this curious phenomenon, but there does not seem to be any reason for attempting to discover a cause different from that which produces similar effects in Europe. According to some, it arises from peculiar winds, which produce a copious deposition of moisture in the shape of fogs, and this is said to cause the red colour of the sun; but, as Mahlman observes, the air is really much drier at that time than at almost any other season of the year; and if the red colour of the sun is to be ascribed to the presence of vesicular moisture in the atmosphere, why is it not seen during the early spring months, when, as is well known, fogs are extremely prevalent?

By observation it has been found, that there is

less rain during November than in any other month; were the phenomenon owing to wet fogs, we should naturally expect a frequent recurrence of rain, while it is found that in general the smoky appearance of the sky is diminished after heavy showers.

It seems highly probable, that the Indian summer, which used formerly to prevail for two, three or even four weeks, was produced by the fires made by the Indians in the forests and prairies, in the same way as the dry fogs of Europe are produced by the burning of the moors. It must be remembered, that the phenomenon has gradually decreased as cultivation has passed further westward, and this fact is strongly confirmatory of the truth of the above explanation.

That dry fogs sometimes exist on this continent, is well known; for instance, in 1819, they spread over a great part of North America. In 1825, a fearful conflagration along the banks of the Miramichi, which extended over 6000 square miles, produced a dark cloud, which extended over ten degrees, in a southerly direction. These and others, too numerous to mention, are instances of the absolute production of dry fogs; and as we know that certain phenomena are produced in Europe by these causes, and a precisely similar phenomenon is observed here, we may fairly conclude that the causes are the same, especially as we can readily account for the decrease of its duration by the gradual retreat of the Indians, and advance of civilization towards the coast, whereby these periodical fires become fewer in number.

In conclusion, I will mention one fact which has been stated to me by an old settler, who has often observed the fully-developed Indian summer, that it was a common observation, that clothes could not be hung out to dry at that period on account of the number of *blacks* floating in the air. If this observation is really a correct one (and doubtless many of the readers of the *Agriculturist* can speak of its correctness or incorrectness), the cause of the phenomenon will be at once apparent, as after every great conflagration, and even in large towns, the rain brings down considerable quantities of carbonaceous particles, which when swimming in a dry atmosphere are usually denominated *blacks*. H. C.

NEW APPLICATION OF THE SYPHON.—The Ohio Cultivator describes the mode of washing sheep which some of the farmers of Trumbull county have adopted. The plan is to select a place near the bank of a stream where the ground is several feet lower than the surface of the water; then place a vat or trough large enough to hold one or more sheep. Then take a syphon made of tin or copper, eight or ten feet long and three or four inches in diameter, and bent nearly in the shape of a triangle, the curve being made a little from the centre; place the short arm in the stream, and the long one outside of the bank, with a gutter made of board to conduct the water to the vat. This furnishes a constant stream, sufficient for washing expeditiously one sheep at a time, without at all disturbing the water in the canal. To set the syphon at work, plunge it into the canal, downwards so as to fill the tube nearly or quite full of water; then stop up the ends, and place it in a position for operation, then withdraw the stoppage and let it run.

The following is the substance of a lecture delivered last winter before the Mechanics' Institute in this city, by the Rev. J. Hurlburt, M.A. We had the pleasure of hearing the lecture, and believing that some portions of it would be interesting and instructive to many of our readers, we requested the Rev. Gentleman to furnish us with an abstract for publication, which he kindly consented to do.

IMPORTANCE OF SCIENTIFIC KNOWLEDGE TO PRACTICAL MEN, AND OF PRACTICAL KNOWLEDGE TO SCIENTIFIC MEN.

No general impulse could be said to be given to improvement in the practical arts of life, till after the revival of letters in Western Europe. Many ancient nations, as the Egyptians, Grecians, Romans, and some countries of Asia, were distinguished for their learning; but their attention was more particularly turned to philology, morals and government. To modern times alone can be attributed any systematic application of the laws of nature to the practical purposes of life. The few facts connected with natural science, known to the ancients, were regarded as subjects of curiosity rather than of utility. But the happy thought of crowding the illimitable powers of nature into the service of man, has opened a new era in the history of our race. Whatever discoveries the ancients may have made in the laws of mind, the principles of political economy and of government, their attention was rarely given to an investigation of the laws of the natural world, as a source of happiness and improvement to man. This constitutes a great difference between their learning and ours. The powers of steam, electricity and galvanism, were never dreamed of by the sages of antiquity. Chemistry, that illimitable source of modern discovery, was entirely unknown to the ancients, beyond a few isolated facts.

At the revival of letters, after the dark ages, Europe began to experience a change more favourable for improvement in the practical arts of life. The spirit of enquiry into the very foundation of our knowledge, the establishment of seminaries of learning, the art of printing, and especially the works of Lord Bacon, in which the true principles of philosophical investigation—the induction of truth from the observation of fact—were illustrated and enforced, and the discoveries in the physical sciences which immediately followed, gave a vigorous impulse to the human mind, and led to the application of scientific principles to the useful arts of life. Little, however, was accomplished till the middle of the last century. During the last one hundred years, man has learned much of the laws of the material world, their nature and uses. He has fused the solid opaque rock, and from it formed the transparent lens of the telescope—an instrument which reveals to him the wonders of the distant heavens; the microscope—opening up a still more wonderful world in the atom and drop of water. This

same transparent glass discloses the secrets of the rainbow, and untwists the delicate rays of the sun. He can compose and decompose the thousand objects of earth around him, scattering the air, the water, the solid rock, the animal and vegetable substances into their original invisible elements, and recomposing them again form their various compounds. He can extract a mysterious agent—galvanism—from inanimate nature, and collecting it to a focus, make it burn fiercer than the concentrated sunbeam or the raging furnace, fusing the most solid metals. This same mysterious agent is made an instrument of transmitting his thoughts with the rapidity of lightning. He casts his broad pathway over rivers and oceans, converting the very element in which he moves into a power to force him against wind and tide. With the same power he traverses hills and valleys, and manufactures many of the comforts of life. He descends into the depths of the earth to bring up its hidden treasures, and with the safety-lamp—more wonderful than Aladdin's—he walks through the perilous deep, with the destructive flame imprisoned in a wire cage, struggling to get free for the work of ruin. Although his abode is upon the surface of the earth, he can estimate the speed of the planets in their orbits through the skies. He can unravel their mystic dances around the great centre of life, and light, and joy.

Turning to the more ordinary avocations of life, his science has led him deeply into their mysteries. He has already learned much of the composition of soils, and the laws of vegetation; the means of resuscitating the exhausted land, and of producing surer and more abundant crops. The arts of manufacture, of dying and calico printing; the uses of the acids and alkalis in bleaching; the processes of brewing and tanning; the manufacture of soap, candles and sugar—of earthenware and porcelain.

But how few of the operators in these arts, have any knowledge of the principles upon which their arts are founded. How then is it possible for them to make any improvement? Scientific men seldom turn their attention to such subjects, and those engaged in them are ignorant of the laws which govern their operations. It is often asserted that many discoveries are the result of chance; this is a mistake—very few discoveries in the arts and sciences are made by those ignorant of the laws of nature, and where chance may have disclosed an important fact, the application and improvement have been made by the hand of science. The application of convex lenses in the construction of telescopes and microscopes, of steam to machinery, of galvanism to the telegraph, the illumination of cities and dwellings, and the analysis of chemical compounds, the pendulum, the spinning jenny, the safety lamp, the refining of sugar, the extracting of metals from their ores,—have been the result of the most elaborate researches, directed by the hand of science.

It may, therefore, be laid down as an axiom, that no important discovery is to be expected, except as the result of a knowledge of the laws of nature and unwearied investigation. How could it be otherwise? The great Architect of the

Universe has planned and executed every thing according to certain fixed laws. The adaptation of means to an end is perfect, the machinery is perfect, the operation is perfect. Every part of this vast creation, from the atom to the world—from the tiny insect to the archangel, bears upon it the stamp of infinite wisdom. It is a piece of divine mechanism, perfect in every part. So undeviating are the laws of nature, that the same substances, whether animal, vegetable or mineral, are formed of the same elements in unvarying proportions. "God has meted out the heavens with a span, comprehended the dust of the earth in a measure, and weighed the mountains in scales and the hills in a balance."—Isa. xl. 12. Everything is literally "meted out," "measured," "weighed in a balance." Nothing is formed casually or by chance. How then can these laws be "comprehended" or discovered by chance? As well might it be supposed, that well written and scientific treatises could be formed by throwing the twenty-four letters of the alphabet upon the paper, as to suppose that *chance* could unravel the laws of nature.

The workers in the various departments of human industry, have superior facilities for making new discoveries. Acquainted with the processes in their respective departments, and with their defects, facts are constantly falling under their observations, which, if their hands were guided by philosophical knowledge, might lead to undiscovered laws, or improved operations. To quote but one example in illustration, to be found in works on chemistry. "A soap manufacturer, observing that the residuum of his ley, when exhausted of the alkali, for which he employed it, corroded his copper boiler, put it into the hands of a chemist for analysis. The result was the discovery of one of the most singular and important chemical elements—iodine. The properties of this being studied, were found to explain a variety of new, curious and important views then gaining ground in chemistry, and thus to exercise a marked influence over the whole body of that science. Curiosity was excited; the origin of the new substance was traced to sea-plants and to the seawater, thence to salt mines and springs, and marine plants—amongst others, to the *sponge*. A medical practitioner then called to mind a reputed remedy for one of the most grievous and unsightly disorders to which man in high and mountainous regions is subject—the *goitre*, which was said to have been cured by the ashes of burnt sponge. He tried the iodine, and found it an effectual cure." Thus the casual observations of the soap manufacturer proved a benefit to science and a blessing to mankind. This fact none other but a soap manufacturer might have observed for an age; but had practical men been scientific men, it might have been discovered long before. This is but one amongst the thousand facts constantly falling under the observation of workmen, whilst the philosopher is demonstrating his principles, or forming his theories in his closet, but often confounded, or led astray for want of such practical acquaintance with nature.

Such knowledge would also contribute to the

comfort and safety of millions of our race. To the physician, the surgeon and the apothecary, acquaintance with the principles of chemistry is indispensable. The processes of absorption, secretion, fermentation, composition and decomposition, constantly going on in our systems, are all chemical, and may be controlled by the skilful practitioner. Chemical substances, which administered separately are perfectly harmless, but introduced into the stomach at the same time, may form the most virulent poisons, and immediately destroy life.

Some knowledge of geometry is highly useful to every mechanic and artisan, in the construction of angles, drawing parallels, perpendiculars, circumferences and arcs, and to estimate the square or cubical contents of any piece of workmanship.

A knowledge of mechanics is of vast importance to all who are employed in combining materials, raising weights, building piers and bridges.

The principles of hydrostatics and hydraulics have a direct application to the construction of pumps, water-wheels, fountains, fire-engines, canals, wet docks and reservoirs, flood-gates, dams and banks, and in conducting water over hills and valleys.

The resistance, pressure and elasticity of the air, admit of numerous applications to the practical purposes of life, in the construction of barometers, syphons, syringes, air-pumps, water-pumps, hydraulic machines, the durability of gluing, tenacity of cements, stability of walls, and the construction of chimneys, for even smoke will refuse to ascend a chimney unless it be constructed on perfectly philosophical principles, and rather than be forced up an ugly hole, will obstinately linger about the fire-place, until the door or some decent passage be opened for its egress.

Such knowledge would not only facilitate discoveries and improvements in all the arts and sciences, but would prevent innumerable casualties and fatal accidents.

Under this head, a few examples must suffice. The safety-lamp of Sir Humphrey Davy has doubtless saved the lives of thousands of miners; for according to the most accurate calculations, some thousands of these unfortunate persons every year fell a sacrifice to the explosion of carburetted hydrogen gas (called by the miners *fire-damp*). Explosions frequently occur, when the safety-lamp is used; for through the ignorance or carelessness of the manufacturers of the wire of which the lamps are formed, the apertures are too large. From well-attested experiments it is found, that if the openings of the wire gauze are more than one-twentieth of an inch in diameter, an explosion will take place.

I will quote an example which occurred some time last autumn (1848).

"*Frightful Colliery Explosion.* On Wednesday afternoon, a colliery, called the Darley Main, situated three miles from Barnsley, on the Sheffield road, was the scene of a terrific explosion of fire-damp, resulting in the ascertained loss of seventy-eight lives. This colliery is the property of Messrs. Jeffcock and Jarret, of Doncaster, and is not a mile from the Oaks or Audley Main Col-

liery, where it may be remembered, in March, 1847, an explosion of fire-damp caused the loss of no less than seventy-three lives; and about two years since, a similar accident occurred at the Darley Main."

Here carelessness or ignorance in the manufacture of a penny-worth of wire, led in these two instances to the sacrifice of 151 lives, which a little attention to the structure of the safety-lamp would have prevented.

Similar accidents often occur by descending wells, or entering caverns, in which carbonic acid gas, being heavier than the air, often settles. This gas immediately destroys life. We sometimes meet with statements like the following, taken from a late paper:—"Death of two men from entering a well. On Wednesday last, two men were killed by entering a well for the purpose of cleaning it. One man had descended to within a few feet of the bottom, when he suddenly fell. A second man immediately went down to his assistance supposing some accident had happened, but when he had arrived at the same place, he also fell, apparently dead. The neighbours were called to their assistance, but when they were taken out, life was extinct." Another—

"Death of two young ladies. Two young ladies, of the name of Grant, one about eighteen and the other twenty, were found this morning, one dead, and the other too far gone to be restored. The night being cold, a kettle of coals was placed in their bedroom, which was doubtless the cause of the fatal accident."

In both cases, carbonic acid gas was the fatal instrument of death. In the first, a simple experiment might have prevented the casualty. Had a lighted candle been let down into the well, the light would have been extinguished, which would have been a warning that the air was too impure to support life; for when a candle will not burn, animal life cannot subsist. A few pails of water thrown into the well, or boughs of a tree with the leaves on let down and drawn up a few times, would expel most of the gas, and render it safe to descend. In the other case, a knowledge of the fact, that in combustion, whether of candles, lamps, wood or coal, this same destructive gas is given off, would have been a sufficient caution against burning any quantity of coals in the open room.

But from many other causes, where life is not in immediate danger, the health is gradually but easily undermined. One almost universal source of shortening human life, is the impure air of our dwellings. How often does it occur, that those who enter upon the winter in good health, or not very poor health, are sickly, or die in the spring? A lady, an acquaintance of mine, never complains of poor health in the autumn, but does invariably in the spring. While there may be some other circumstances leading to this result, who can doubt that want of ventilation of our dwellings is the prime cause? From November till April the window is not thrown up, or if it be, the door is shut, thus preventing a free ventilation of air through the room. To secure perfect ventilation, the top as well as the bottom of the window

should be opened; this is seldom done. There is no pure air admitted for six months, except when through the kind consideration of the builders, openings are left around the windows—a not unfrequent occurrence. But the advantage which nature would take of this oversight of the artist, is prevented by the vigilance of the housekeeper, who with knife and listing effectually secures every entrance to her palace. This impure air, with the dust constantly floating in the most carefully kept room, completes the work of destruction. Let any one examine a room when the sun shines brightly into the window, or try the experiment of writing his name on any article of furniture ten minutes after the dusting of the room, and he will be astonished at the number of the particles of the carpet, feathers, &c., taken at every breath into his lungs. The same is true of many churches. As if the very air in them was consecrated, it is carefully kept from year to year, and from generation to generation, with all the accumulated impurities arising from lamps, candles, and respiration.

These remarks might be extended to the condition of our large towns and cities, where every tree which would take up the carbon thrown off from thousands of lungs and fires, is carefully cut down by our kind city-fathers;—to the many sources of disease, in the dirty lanes and sinks, where all the pestilence-breeding filth is thrown. But time would fail to multiply the instances which would occur in every-day life, where health and happiness might be promoted, disease and accident prevented; as in adopting clothing to the various seasons of the year, to different constitutions and circumstances, to different ages and conditions; the choice and preparation of food; the care of children; cleanliness exercise, &c.

[To be continued.]

NEW CLEANSER FOR FLOURING MILLS.—Mr. E. R. Benton, a millwright of Milwaukie, has invented a highly ingenious machine, to which he gives the above name. It is for the purpose of taking the bran as it comes from the bolt and cleaning it of the flour which adheres to it, and which, without the adoption of some such process, is wasted, and also for separating bran and shorts. The machine is in the form of an upright cylinder, about four feet high and two feet across, within which are two revolving cylinders curiously fitted up with wire cloths of various fineness, perforated sheet-iron plates, &c. &c.

The bran is brought by an elevator to the top of the cylinder and passes through a shaking sieve, which throws out the large lumps, that might clog the machine, down among the revolving cylinders. A current of air is driven up from beneath into the centre of the cylinder inside the revolving part, and by the operation of this current of air and the revolving of the mechanism, the bran, shorts, and two kinds of flour are passed off into separate receivers. The coarser flour is passed back into the elevator to go through the machine again, and the fine passes down into the bolt. A hammer constantly raps on the top of the revolving sieves to keep them clear from being clogged up.

We can give but an imperfect idea of this ingenious invention; it is simple, yet accurate in all its movements, and seems admirably adapted to the use for which it is designed. Three other machines for a

similar purpose have been invented at the East within two or three years, but Mr. B. considers his much superior to either of them, and skilful machinists speak in high terms of it. He says that about one-eighth of the mixed stuff as it comes from the bolt to the machine is saved as fine flour, and that in the very best mills three and a half per cent. of the flour ground will be saved; more, of course, in mills less perfectly built.—*Buffalo Commercial Advertiser.*

CREATIVE DESIGN.—Lord Bacon assigns to science a two-fold object, the relief of man's estate, and the glory of the Creator. There has never, in this country, been a disposition to underrate its last, and most honoured use. In the same spirit in which they studied the 'book of God's word,' Englishmen have studied the 'book of God's works.' Maclaurin heard Newton observe that it gave him particular pleasure that his philosophy had promoted the attention of final causes, and his followers, who could not rival him in his genius, have not degenerated from his piety. It has been their delight to dwell upon the fact, that though a casual survey of the world proclaimed a Maker marvellous in goodness and in power, yet every hidden law which was brought to light afforded additional evidence of design, and shewed him beyond what man could conceive, 'wonderful in counsel and excellent in working.' With us the exceptions at least have been few, and none of them deserve to be remembered. But in France atheism, without limitation or disguise, has too often been blended with an extensive acquaintance with natural philosophy; and a living man of science, M. Comte, imputing to the works of creation the imperfections which in reality are in his own judgment, has come to be of the opinion of that impious king, who said that if the Deity had condescended to consult him he could have given him some good advice. Supposing it impossible that a philosopher who had run the range of physics, and written a bulky work in which he contends for the utmost strictness of reasoning, could take up a dogma which shocks the instincts of mankind, without some plausible pretence, we read his observations with close attention and painful interest. We laid down the book astounded at their imbecility, and it could only re-echo the Psalmist's declaration, that it is *the fool* which has said in his heart there is no God. His argument might have been penned expressly to prove that there is a credulity of scepticism as well as a credulity of belief, and it is difficult to assign any motive for his creed except the morbid passion for distinction which leads some men, and especially Frenchmen, to prefer the elevation of a gibbet rather than walk upon level ground. Yet he had every advantage, for he only undertook to insinuate objection, which must always be easy on mysterious questions, about which knowledge is imperfect.

Atheists are cowards in discussion; they dare not meet the united evidence, and set out in a formal shape the contending system by which they are bound to establish that the contrivances of the world did not call for a contriver. Even of evils we can fix upon nothing tangible, amidst the cloudy language of M. Comte, except that the arrangements we make are usually superior to the arrangements we find. And this is the argument which is to prove that there is not a maker and a governor of the world! Is it so much as a defect in the scheme that man has often to plan for himself? With every thing ready prepared to our hands, ingenuity would languish for want of stimulus; and if it be a curse to eat our bread in the sweat of our brow, a greater curse still, in our present condition, lights upon him whose forehead neither sweats from toil nor aches from thought. As Alexander wept when no more worlds were left to conquer, so we likewise should

sigh if a too bountiful nature left nothing to be discovered and nothing to be improved. It is a part of our enjoyment here to employ our talents in neutralizing evils, in turning apparent disadvantages into benefits, in finding in hostile agencies elements of power which a presiding genius converts to as many friendly ministers. Nor need we suppose that a progressive development of material advantages, instead of a complete and original perfection, bore hard upon earlier generations, who, living in the infancy of the world, lived also in the infancy of civilization. Man, with respect to corporal comforts, is the creature of habit. To whatever he is accustomed, that he enjoys. The Greenlanders, with his wretched hut and barren soil, believes himself the most favoured of created beings, and pities the lot of nations which are destitute of the luxury of seals. In like manner it is probable that the early inhabitants of Britain were as satisfied with a cave or a cottage of clay, as we with our mansions adorned with all the products of the arts. So, too, in the same age the king would think himself meanly accommodated in the house of the gentleman, the gentleman in the abode of the peasant—and yet custom has adapted each to his own. It is not the absolute degree of refinement that confers the pleasure; it is the improvement on what we are used to, the addition to what we already possess—and this pleasure has been common to every period in which the wants of mankind were sufficiently keen to excite invention and common art to aid nature. But in all our improvements we can only, by the strength and intellect which God has given us, mould the matter which God has made. If we can sail in ships upon the great deep, it is because He supplied us with the wood for their construction, and endowed it with the buoyancy to float upon the waves. If we perform prodigies with steam, it is because he gave it an elastic power, ordained that fire should evolve it out of water, and provided us both with the water and the fire. We merely use the things with which he has presented us, and presented with a foresight of the end to which our capacities and wants would enable us to devote them. We can adapt, but we cannot create. The greatest genius that ever lived is impotent to give being to the most insignificant particle of dust. It required the powers of Sir Isaac Newton to detect many natural laws; but even the Newtons of the human race can only discover laws—they cannot make them. We may worm out the secret powers with which Nature is invested, and by new adaptations produce effects of which the native elements are utterly incapable; but at best we only avail ourselves of properties already existing, merely develop the latent energies innate in our materials. We pull to pieces, and put together, we shape, and we arrange, but we cannot add to the world a single atom, nor even take it away. Whatever our triumphs, we never passed this limit to human interference, which teaches everybody, capable of being taught, that we are after all only creatures, and that another is the creator. But M. Comte can believe any fable rather than believe a God. He is willing to imagine that the sun, the earth and the planets may have come into being without an author, being whirled in their orbits, endowed with gravity, peopled with wonder: for parodying Scripture, he asserts that the only glory which the heavens declare is the glory of Newton. The remark is one example out of many that French wit is often nothing but English flippancy. If the heavens declare the glory of Newton, then whose glory does Newton display? But the poison is too weak to take effect, except upon vain and vicious understandings. The arguments of atheists are like chaff in the wind—they may settle for a moment, but from their natural levity the first opposing current sweeps them away. We do not require the lessons of Natural Philosophy to teach us to believe.

Their use is, that they assist us to adore. The further we go the more we are constrained to wonder and admire; and though we see but in part, and often retire baffled from the effort to interpret nature, we see enough to bring away the most inspiring sentiment with which men can glow—the deep feeling of the Psalmist's words:—'All Thy works praise Thee O Lord, and talk of thy power; There is no end of Thy goodness.'—*Quarterly Review*.

RATIONALE OF SWIMMING.—The weight of the human body is very nearly equal to that of its own bulk of water; its magnitude, however, is subject to a small variation, caused by the action of breathing; when the lungs are inflated, the volume of the body is greater than after they collapse. It is true that in this case the weight of the body as well as its magnitude, strictly speaking, undergoes an increase; but the change of weight is comparatively small, being that of a few grains of air, which are alternately inspired and breathed out. The change of volume produces, however, a sensible effect when the body is immersed in the liquid. When the chest is inflated with air by drawing in the breath, the body is somewhat lighter than its own bulk of water; and, if it be immersed in that liquid, it will displace its own weight before total immersion takes place. If the head be presented upwards and inclined backwards, so as to keep the mouth and nose in the highest possible position relatively to the remainder of the body, a person may float with about half the head above water when the chest is filled with air; and when he breathe out, his lungs collapse, and the bulk of his chest is diminished; his weight, however, remaining the same, he must sink deeper in order to displace his own weight of water. A living body floating on water is, therefore, in a state of continual oscillation, alternately rising and sinking; this effect is increased by the inertia of the body; for when it descends, it will not cease to sink exactly at that depth at which it displaces its own weight of water, but it will continue to move with the velocity it has acquired, until the increasing weight of the water displaced forces it to return upward, its alternate ascent is similarly increased. This effect may be observed by pressing a piece of cork in water to a greater depth than that at which it naturally floats; an oscillation will ensue which will continue for some time. Hence arises one of the difficulties which are found in floating on water; for, in the alternate sinking of the body, the mouth and nostrils may be so choked as to intercept the breathing; a slight action of the hands or feet is therefore necessary to resist the tendency to sink after each expiration from the chest.—*Lardner*.

POWER OF EXPANSION IN ICE.—The general law is, that all bodies are expanded by heat, and contracted by cold. If it did not, ice, as it forms, would sink to the bottom, and our streams freeze solid. A correspondent of the Montreal Herald, lately experimented on the expansive powers of freezing water, with the following result:

He filled a 24 lb. shell (the diameter of which was 5.547 inches, and about three-fourths of an inch in thickness) with water, and plugging up the whole securely, exposed it to the action of the frost, during one of our keenest nights this winter. In the morning he found the mighty power had divided the iron mass into four sections, one of which weighing four and a half pounds, was thrown 20 and a half yards, and must have passed upwards, over a wheel behind which it had been placed—the ice remaining in the section left behind, as if it had been pounded.

THE BITE OF THE ADDER.—The adder, though justly an object of aversion and dread, is by no means so

noxious a creature as is commonly believed. It never makes an unprovoked attack; but is induced to bite only when suddenly molested, or when obliged to act in self-defence. The chief danger to any persons walking in its vicinity, consists in coming close upon it, and appearing to intend it damage, while it is unobserved. Its bite, too, though quite painful and venomous enough to be matter of serious apprehension, is exceedingly far from being necessarily fatal; and probably may, in every instance, with a due regard of care, be somewhat easily cured. In a moss in the neighbourhood of Bucklyvie, in Scotland, a farm servant, while engaged in cutting peats, a few years ago, was stung by an adder, and died in consequence of the wound in about ten days. The first precaution to be observed in a case of this kind, is, when the disposition of the parts will permit, to fix a ligature above the wounded place, and not to tighten it too much, for fear of giving rise to mortification. Immediately after, a cupping-glass is applied to the wound, the parts adjacent being scarified; and this mode, highly praised by Celsus, has very recently been attended with happy results in the hands of Messrs. Mangili, Barry, and Bouillaud. The method, from analogy, affords an additional recommendation to employ the plan of suction, which has received the further confirmation of professional experiments tried by a number of physiologists and physicians. When the cupping glass has performed its office, the lips of the wound, already scarified, should be cauterized deeply and extensively. This should be done with a red-hot iron, chloride of antimony, or concreted potassium. A variety of different substances, taken internally, has been lauded from time to time as efficacious against the bite of the viper. Sudorifics have been especially recommended. Fomentations of warm vinegar, an aqueous solution of sal ammoniac, or a solution of sugar-of-lead in water, with the addition of a little camphorated spirit, may be applied when horses or dogs have been bitten by vipers. In ordinary cases, relief will be afforded by applying salad oil to the injured part, and also giving it internally. The name adder, by which the viper is popularly known, appears to be a corruption of the reptile's name in the language of the Welch or of the ancient British.

IMPROVED STEELYARD.—Messrs. F. & W. Flint, of Westford, Mass., have recently put in operation an improvement in the Steelyard, which is simple, ingenious, and combines a weighing machine apparatus and self-calculator.

The beam is suspended on a pivot and contains notches on both ends, on each side of the pivot on which the beam turns. Suppose one end is graduated with 100 notches, and the other 200, the notches indicate so many cents, half cents, and quarter cents, which are marked and figured accordingly.

On the short end is found the price per pound or ounce, and on this the scale-pan or article is placed. Then, wherever the poise-weight on the other end is found to level the beam, is marked the precise value of the article weighed, according to the specified price per pound or ounce.

This improvement, it is said, may be applied to platform, and all the variety of scales now in use; and the calculator applied to the English computation of money as well as that of the United States.—*Farmer and Mechanic*.

GENTILITY is neither in birth, wealth, manner, nor fashion—but in mind. A high sense of honour, a determination never to take a mean advantage of another, an adherence to truth, delicacy, and politeness towards those with whom we have dealings, are its essential characteristics.

Domestic and Miscellaneous.

"HOUSE AND HOME."

What's a House? You may buy it, or build it, or rent;
It may be a mansion, a cottage, a tent;
Its furniture costly, or humble and mean;
High walls may surround it, or meadows of green.

Tall servants in livery stand in the hall,
Or but one little maiden may wait on you all;
The tables may groan with rich viands and rare,
Or potatoes and bread be its costliest fare.

The inmates may glitter in purple and gold,
Or the raiment be homely and tattered and old;
'Tis a house, and no more, which vile money may buy;
It may ring with a laugh, or but echo a sigh.

But a Home must be warmed with the embers of love,
Which none from its hearthstone may ever remove;
And be lighted at eve with a heart kindled smile,
Which a breast, though in sorrow, of woe may beguile.

A home must be "Home," for no words can express it,—
Unless you have known it, you never can guess it;
'Tis in vain to describe what it means to a heart
Which can live out its life on the bubbles of art.

It may be a palace, it may be a cot,
It matters not which and it matters not what;
'Tis a dwelling perfumed with the incense of love,
From which to its owner 'tis death to remove.

WHAT TO EAT, DRINK, AND AVOID.—A GUIDE TO HEALTH AND LONG LIFE.—BY R. J. CULVERWELL, M. D.

I shall not particularize the "vegetable kingdom" by an analysis of its orders, but merely take a view of a kitchen supply, or such as is most common to the dinner and desert table. Bread comes under the denomination of a vegetable, and is best known as home-made, domestic, white and brown bread. We have varieties, in the form of biscuits, pies and puddings, made from the same material—flour. Of these I will first speak. *New bread is very unwholesome*; it should, by every body, be eaten after it is *one day old*. Invalids should have it toasted, and eat it only when cold, buttered or not, as may be. It must be recollected that bread is always imperfectly baked, the top and bottom being the only parts thoroughly done; hence toasting completes the process. White bread has a tendency to constipate the bowels; it is rendered more astringent by the alum the bakers mix with it. Brown bread, being made of coarser materials, that is, flour not so well pulverized and sifted, *works its way*, and helps to preserve the bowels in a healthy lax state. The best plan is to alternate their consumption, or take the brown bread for breakfast and tea, and the white for dinner; or reverse it if it be preferred.

Bread is usually fermented with *yeast or leaven*, but of late years unfermented bread has commanded great consumption; it is certainly more wholesome—more saving in the preparation, both as to time and money, and, what is well to know, less constipating and indigestible than fermented bread proves to be to many. The following is the best formula employed:

To make white unfermented bread.—Take of flour, dressed or household, 3 lb. avoirdupois; bicarbonate of soda in powder, 9 drachms apothecaries weight; hydrochloric (muriatic) acid, specific gravity 1.16. $11\frac{1}{4}$ fluid drachms; water, about 25 fluid ounces.

To make brown unfermented bread.—Take of wheat meal, 3 lb. avoirdupois; bicarbonate of soda, in powder, 10 drachms apothecaries weight; hydrochloric (muri-

atic) acid, specific gravity 1.16. $12\frac{1}{4}$ fluid drachms; water, about 28 fluid ounces.

The following are the instructions to the cook or housewife for carrying out the preceding directions: first, mix the soda and flour well together—let the soda be well rubbed down in a mortar, and then scattered through a sieve over the flour, stirring them together in a large bowl. Mix the acid well with the water, which should be cold, or lukewarm, by the aid of a wooden spoon; then make dough, the thinner the better, in the usual manner, by mixing the flour and water as quickly as possible; divide it into loaves of convenient size, which had better be put into earthen pans, and put them immediately into a hot or quick oven. In about an hour and a half they will be sufficiently baked. The soda and acid used, form, when mixed, common salt, but the process of their conversion, the effervescence, it is that expands the dough and answers the purpose of the yeast. If there be too much soda or acid, the bread will be correspondingly flavoured, and where lumpy, slightly discoloured, but neither circumstance is of any moment.

This form of bread admits of many of the usual modifications, such as the use of milk, and its conversion into puddings, cakes and biscuit.

To make a good plain pudding, which may be rendered into plum, currant, suet, &c., thus: Take of best flour, $1\frac{1}{2}$ lb.; bicarbonate of soda, $\frac{1}{2}$ an ounce; hydrochloric acid, 5 fluid drachms; suet, $\frac{1}{4}$ lb.; ginger, $\frac{3}{4}$ drachm; water (more or less) 1 pint. Mix quickly, as before advised, and boil in a basin or bag.

To make cakes.—Take of flour, $1\frac{1}{2}$ lb.; bicarbonate of soda, $\frac{1}{2}$ an ounce; hydrochloric acid, 5 fluid drachms; sugar, $1\frac{1}{2}$ ounces; butter, $1\frac{1}{4}$ ounces; milk (more or less), $1\frac{1}{4}$ pints. Mix the flour and soda, then add the butter; then dissolve the sugar in the milk, and diffuse the acid, by stirring it, as before directed, with a wooden spoon; then mix the whole intimately, adding fruit at discretion, and divide the product into two or more portions for baking, which is best effected in flat earthen pans.

Bread, of course, is held to be the staff of life, and it is a great consideration how it can best be prepared. Few families have conveniences or time to make and bake their own, and it is no easy matter to persuade bakers that the plan as advised herein is the easiest, cheapest and best, but it is really the case; and what is of equally great importance, it is more nourishing and wholesome, and, to the dyspeptic invalid, it is a most valuable corrective. Independently of its being very valuable, it keeps much longer than common bread, and does not so readily turn sour. However, the instructions are so simple and easy that the experiment is worth the attempt; and were bakers generally to sell it, they would find the demand very quickly compensate them. The remarks I have offered of the superiority of brown bread over white, as a laxative, bear good, whether the bread be fermented or otherwise; but the unfermented is much superior, as not only helping to keep the bowels in ordinary action, but as being positively more digestible; and, instead of being productive of head-ache, acidity, irritability of stomach, flatulence, and other symptoms of dyspepsia, it is corrective and avertive of all these. In Liebig's views of the sustenance of life, it will be learned that the several portions of our food go to form the various structures of our body; such as meat and bread form especially the flesh, bones and blood of human beings; portions of their composition go directly to support and nourish the bones; vegetables, fat and sugar, have a destination of their own. Now, in the process of refining flour, of making it white and pure, as it is called, the millers rob it of a very valuable quality—its saline ingredients—which ingredients are indispensable to the growth of bones

and teeth, and are still required to keep them in healthy condition. Hence do we attribute the weakly-formed bones, as evinced by the bent limbs and bad teeth of the children who have been fed chiefly on the finest wheaten flour, or bread which, as has been just now stated, is divested of its salts. The coarser food of the poor secures them stronger limbs and finer figures for their young children, where health, in other respects, is born with them. This is worth reflecting upon; and, since the conversion in my own person and family, and in those patients I have persuaded to follow my example, of consuming brown bread, or, at least of mingling it with white, and of late unfermented, I can bear testimony to its great utility, wholesomeness, economy and agreeableness. It is suggested that mothers and nurses, when suckling their young charges, should consume brown bread---if unfermented, so much the better; for, upon the same principle, just quoted, that the body derives its nourishment from food analogous only in its elements to itself, so it follows that, as the child is fed only from its parent or nurse, it must owe its preservation to the soundness of the source whence it exists.

In continuation of the subject on the varieties of the uses of flour, &c., hot rolls, fancy breads, rusks, and tops and bottoms, are very indigestible for invalids and children. Country people have generally a slice of cake to offer as a complimentary refreshment, with a glass of home-made wine. A dyspeptic would have heartburn and acidity throughout the day, were he to accept such an invitation; but there are thousands of people who can do "that sort of thing" with impunity. Biscuits when well and crisply baked, are wholesome and easy of digestion. Those containing caraway seeds, and whimsically called "Abernethy," are in my opinion as bad as pastry and sweets generally.

Pies and puddings are made, of course, with flour and butter, or suet, and from closer intermixture (apart from the properties of the butter) are less digestible than bread. Bread puddings, made with unbuttered slices of bread, form an excellent meal, or an adjunct to one.

Macaroni, or vermicelli, boiled in beef tea or broth, makes a nice soup. Macaroni or vermicelli puddings are excellent. Rice puddings, baked and boiled, are both capital forms of diet. The former should be made and taken without butter, and with very little sugar.

Barley broth,† porridge, gruel, sago,‡ tapioca,§ rice powder, and other similar preparations, are severally admirable articles of nourishment. Cookery wonderfully alters the taste, appearance and quality, of all farinaceous articles. The various farinaceous preparations make excellent jellies.

Potatoes,	Turnip-tops,
Peas,	Spinach,
Beans,	Brocoli,
Broad Beans,	Brocoli Sprouts,
French Beans,	Cauliflower,
Scarlet Runners,	Asparagus,
Turnips,	Artichokes,
Currots,	Salads,
Onions,	Lettuce,
Parsnips,	Radishes,
Vegetable Marrow,	Cucumbers,
Sea Kale,	Endive,
Greens & Cabbages,	Water Cresses,
Tomatoes.	

Potato,¶ the almost universal vegetable, has advocates and opponents for its adoption. Liebig says, a horse may be stuffed with potatoes, but life thus supported is a gradual starvation, although prisoners have been fed upon them with advantage. Baked potatoes are less nourishing than boiled, and mealy potatoes are more digestible than waxy. Potatoes, in general, engender flatulence. Onions lose their stimulating influ-

ence by boiling, and are then considered wholesome. The best onions are found in Mexico.

In the foregoing table, vegetables of less digestibility than others, or which require stronger powers of digestion (for the two properties are not alike), are printed in italics.

"1. That minuteness of division and tenderness of fibre are the grand essentials for the easy digestion of butcher's meat. The different kinds of fish, fowl and game, are found to vary in digestibility, chiefly in proportion as they approach or depart from these two standard qualities.

"2. Farinaceous food, such as gruel, rice, sago and arrow-root, and like-wise milk, are rapidly assimilated, and prove less stimulating to the system than animal food.

"3. Liquids are slow of digestion, and hence, in excess, are unfit for most dyspeptic persons."

RECIPES.

Bread Pudding.—Grate half a pound of stale bread, pour over it a pint of hot milk, and leave the mixture to soak for an hour in a covered basin; then beat it up with the contents of two eggs. Put the whole into a covered basin, just large enough to hold it, which must be tied in a cloth and placed in boiling water for half an hour. It may be eaten with salt, sugar, or sherry.

Panado.—Place some very thin slices or crumbs of bread in a saucepan, and add rather more than will cover them. Boil until the bread becomes pulpy, then strain off the superfluous water, and beat up the bread until it becomes of the consistence of gruel; then add white sugar, and, when permitted, a little sherry wine. An agreeable aliment for the sick.

RECIPES FOR THE SICK.

Milk Porridge.—Boil a tea-cupful of half-grits in three pints of water, for an hour and a half; strain the water off, and add cold milk, or warm as may be approved.

French Milk Porridge.—Stir a handful of oatmeal into a quart of water, let it stand to be clear, and pour off the latter; pour a pint of fresh water upon it, stir it well, let it stand till next day; strain through a fine sieve, and boil the water until half has been boiled away, then add a pint of milk and boil again. This is much ordered, with toast, for the breakfast of weak persons abroad.

Ground Rice Milk.—Boil one spoonful of ground rice, rubbed down smooth, with three half pints of milk, a bit of cinnamon, lemon-peel, and nutmeg. Sweeten when nearly done.

Sago.—To prevent the earthy taste, soak three table-spoonfuls in cold water an hour, pour that off, and wash it well; then add a pint of water and simmer it gently till the globules are clear, with lemon-peel if approved. Add wine and sugar, and boil all up together.

Water Gruel.—Put a large spoonful of oatmeal by

† Take two ounces of ether, one pint of milk, four table-spoonful of cinnamon water; simmer till the macaroni or vermicelli is tender; then add three yolks and one white of eggs, one ounce of sugar, one drop oil of bitter almonds, glass of raisin wine in half pint of milk. Bake slowly.

‡ To make barley water. Take of pearl barley two and a half ounces, wash them, and add half a pint of water; boil for a little while; throw this liquid away, and then add four pints of boiling water; boil down to two pints, and strain. Raisins, figs, tamarinds and liquorice, are sometimes added to make a diet drink.

§ Sago milk. Take of sago one ounce, water one pint; soak for an hour, pour off the water, and add one pint and a half of good milk, and boil until the sago is dissolved; then flavor with sugar, nutmeg, and wine.

Sago gruel. This is made by boiling the sago in water only, and it also may be flavored with lemon juice, sugar and spice.

¶ Tapioca pudding. Take of tapioca two ounces, the yolks of two eggs, sugar half an ounce, milk one pint. Mix and bake.

¶ As a substitute for the potato, during its scarcity, rice, served up plainly boiled, or "curried," is very nutritious and palatable.

degrees into a pint of water, stir it until it is smooth, and then boil it.

Another Way.—Rub smooth a large spoonful of oatmeal with two of water, and pour it into a pint of water boiling on the fire; stir it well and boil it quick, but take care it does not boil over. In a quarter of an hour strain it off, and add salt and a bit of butter when eaten. Stir until the butter be incorporated.

Barley Gruel.—Wash four ounces of pearl-barley; boil it in two quarts of water with a stick of cinnamon, till reduced to a quart; strain and return it into the saucepan with sugar and three-quarters of a pint of port wine. Heat it and use it as wanted.

Buttermilk with Bread or without.—It is most wholesome when sour, for then it is less likely to be heavy; but patients generally think it more palatable when it is made of sweet cream. Pour the buttermilk over a couple of slices of bread, and let them soak ten minutes.

Baked Fruits.—Apples baked in an oven, or roasted before the fire, with a small quantity of good brown sugar surrounding them, make an excellent meal for invalids. Pears are equally good, but they should be baked with sugar-house molasses. Raisins also may be boiled until they swell, and then baked with soda or other biscuits, that have been crumbled and steeped in water. Sweeten them with a few tea-spoonful of sugar. The raisins are sometimes baked with light pale sponge cake which has been immersed in water. The pans in which the raisins are baked should be well buttered.

Biscuit Jelly.—Biscuit jelly is particularly serviceable in cases of debility of the digestive organs. Boil a quarter of a pound of soda or sea biscuits in as much water as will cover them. When they have boiled to a jelly, strain them through a fine sieve or jelly-bag, sweeten them with powdered sugar according to your taste, and add a wine glass of port wine and ten drops of cinnamon water.

Hartshorn Jelly.—Boil a quarter of a pound of hartshorn shavings in a quart of water. Stir it that it may not burn. When so much of the water has evaporated that the jelly begins to thicken, strain it, add the juice of half a large orange, half a small wine glass of sherry, and a table-spoonful and a half of white sugar. Set the jelly over the fire again and let it boil five minutes, it is then fit for use.

EVIL CONSEQUENCE OF SMOKING.—The widespread habit of smoking has not yet had due medical attention paid to it and its consequences. It is only by two or three years' observation, that Dr. Laycock has become fully aware of the great changes induced in the system by the abuse of tobacco, and of the varied and obscure forms of disease to which especially excessive smoking give origin. He proceeded to state some of them, as they were met with in the pharyngeal mucous membrane, the stomach, the lungs, the heart, the brain, and the nervous system. The tobacco consumed by habitual smokers varies from half an ounce to twelve ounces per week: the usual quantity from two to three ounces. Inevitable cigar smokers will consume from four to five dozen per week. The first morbid result is an inflammatory condition of the mucous membrane, of the lips and tongue, then the tonsils and pharynx suffer, the mucous membrane becoming dry and congested. If the thorax be examined well, it will be found slightly swollen, with congested veins meandering over the surface, and here and there a streak of mucous. The action of tobacco-smoking on the heart is depressing, and some individuals, who feel it in this organ more than others, complain of an uneasy sensation about the left nipple, a distressed feeling, not amounting to faintness, but allied to it. The action of the heart is observed to be feeble and irregular. An uneasy feeling is also experienced in or beneath the pectoral muscles, and oftener on the right side than the left. On the

brain, the use of tobacco appears to diminish the rapidity of cerebral action, and checks the flow of ideas through the mind. It differs from opium and henbane, and rather excites to wakefulness, like green tea, than composes to sleep; induces a dreaminess which leaves no impression on the memory, leaving a great susceptibility, indicated by a trembling of the hands and irritability of temper. Such are the secondary results of smoking—so are blackness of teeth and gum-boils.—There is also a sallow paleness of the complexion, and irresoluteness of disposition, a want of life and energy, and in constant smokers who do not drink, a tendency to pulmonary phthisis. Dr. Wright, of Birmingham, in a communication to the author, fully corroborates his opinions; and both agree that smoking produces gastric disorders, coughs and inflammatory affections of the larynx and pharynx, diseases of the heart, and lowness of the spirits, and, in short, is very injurious to the respiratory, alimentary and nervous systems.—*English Literary Gazette.*

IMPROVED METHOD OF PRESERVING MILK.—We learn from the *Chemical Gazette*, that F. H. S. Louis has patented an improved method of preserving milk. The milk is to be mixed with well clarified raw sugar, 4 oz. to the gallon. It is then to be evaporated with agitation; when nearly solid it must be pressed into cakes of suitable size.

Steam may be used for evaporating, or if time is no object, spontaneous evaporation in very shallow pans, with the fluid not more than one-tenth of an inch in depth, or a drying chamber may be used, the temperature not to exceed 122 degrees Fah.

The cakes remain sweet and fresh for a long time and are soluble in warm water. Another process is to heat the sweetened milk, nearly to the boiling point, and before it becomes cold, to curdle it by rennet or a weak acid. The curd is separated from the whey, and by strong pressure after washing in cold water, it is obtained free from adhering water. The whey is to be evaporated to dryness. The curd placed over a slow fire is continually stirred, and the dried whey added very gradually, with a small portion of bicarbonate of soda. After a while the ingredients melt and unite. A small quantity of finely pulverized gum-dragon, hastens the solidification.

Cream may be preserved by the same methods.

IMMORTALITY OF MIND.—While the mind rests with a pleasing satisfaction on the great deductions of philosophy, it yet pants for a fuller and higher revelation. If the man of clay has been honoured with such a luxurious table, may not his undying and reasonable soul count upon a spiritual palace and sigh for that intellectual repast at which the master of the feast is to disclose his secrets? In its rapid, continued expansion, the mind, conscious of its capacity for a higher sphere, feels even now that it is advancing to a goal more distant and more cheering than the tomb. Its energies increase and multiply under the incumbrances of age; and even when man's heart is turning into bone, and his joints into marble, his mind can soar to its highest flight, and seize with its firmest grasp. Nor do the affections plead less eloquently for a future home. Age is their season of warmth and genial emotion. The objects long and fondly clasped to our bosom have been removed by Him who gives, and who takes what he gives; and lingering in the valley of bleeding and of broken hearts, we yearn for that break of day which is to usher in the eternal morn—for the house of many mansions which is already prepared for us, and for the promised welcome to the threshold of the blest, where we shall meet again the loved and the lost, and devote the eternity of our being to the adoration of its Almighty Author.

Editors' Notices, &c.

REPORTS OF COMMON SCHOOLS.—We have been favoured by the Chief Superintendent of Education with copies of the Annual Reports of the Normal, Model and Common Schools, in Upper Canada, for the years 1847-8. These are documents of no common interest, in relation to a subject of vital importance—the education of the masses of this country. They bear evident marks of having been prepared with great industry and care, and the extensive statistical returns embody a large number of facts in reference to the practical working of the common school system. Of whatever improvements that system may yet be susceptible, it is evident that it has already been productive of a large amount of good. We are gratified to find that instruction in the principles of Agriculture forms a part of the course of study instituted in the Normal School; and the teachers that are annually sent out from that valuable institution cannot fail of instructing the minds of the rising generation in rural as well as in more purely intellectual pursuits.

HOME DISTRICT AGRICULTURAL SOCIETY.—The Fall Show of this society will be held at Richmond Hill, on the second Wednesday in October. We hope a more general interest in the improvement of agriculture will be excited throughout this important district, by occasionally having the exhibition out of the city of Toronto.

TORONTO MECHANICS' INSTITUTE.—We perceive that the managers of this popular institution are again getting up an Exhibition, comprising mechanical inventions, works of art, domestic manufactures, natural productions, &c. &c. This exhibition is to commence on the 25th of September, and will continue open to the public for a fortnight. We strongly recommend our country readers, when they come into the city, to pay the Mechanics' Institution a visit, the charge for admission being only 74d. for each person. They cannot fail to come away both gratified and instructed.

REMEDY FOR CHOLERA.—A correspondent sends us the following specific, as having proved efficacious in a number of instances. We insert it at his request, cautioning our readers, however, against placing much reliance on any published nostrums. In case of an attack by this or any other kind of disease, the only safe way is to have recourse to the best medical skill within reach, and without delay.

“Pour 1½ oz. of spirits of wine on ¼ oz. of camphor, to dissolve it. Take five drops every five minutes for three doses. Then wait half an hour; and should not perspiration be freely induced in that time, continue the dose as before until animal warmth is restored, when an additional dose will usually effect a cure. This is for an adult—children of course proportionably less.”

M. W., Chatham.—We are obliged by your communication; it arrived too late for the present number.

W. M., Port Credit.—Your communication in our next. We will turn our attention to the subject of your remarks the first opportunity.

AGRICOLA.—The continuation of the papers on the Application of Science to Agriculture, will be resumed at the commencement of winter, when farmers will have more leisure for that kind of reading; we have of late been too much engaged in travelling about to write on scientific subjects. The papers on the most important breeds of domesticated animals, to which we have already given a general introduction, will appear in the commencement of our next volume.

A. F., Dunnville.—The price of flax seed varies from about 4s. to 4s. 6d. currency per bushel of 56 lbs. We believe all dealers in seeds in this city purchase it. Messrs. Dew and McGee, of the Toronto Flax Mills, are no doubt purchasers.

STATE OF THE MARKETS.

From *England* we learn, up to the latest dates (Aug. 11th), that the grain crops generally were most promising, which was also the case both in Scotland and Ireland. Prices consequently ruled low, with a downward tendency. Hops, it would appear, were generally blighted, and the prospect of a crop quite hopeless. Prices had advanced to 80s. and 90s. per cwt. for hops of the growth of 1848.

In Upper Canada the wheat crop will be above an average, and it has been secured in good condition. In some of the eastern sections of the province the drought has been injurious to all kinds of crops, especially spring crops, which are generally short, although we have seen in various places peas, barley, oats and hay in great abundance. That destructive enemy to wheat, the rust, has this year been less injurious than usual; yet it has somewhat affected the wheat crop to a considerable extent in several localities, diminishing the weight and quality of the grain. Upon the whole, however, we have abundant reason to be thankful to the bountiful Giver of all good for causing the earth to yield a liberal increase. Our farmers, we trust, will obtain remunerating prices.

In the *Toronto* market there continues considerable activity in new wheat, occasioned chiefly by American purchasers, who will buy Canadian produce until the arrival of supplies from the Western States. In large portions of the South Western States, we understand the wheat crop has been greatly injured, and in some instances entirely destroyed, by the weevil and rust. How clearly do these facts shew the mutual benefit the reciprocity bill would confer on both countries.

TORONTO MARKET.

Aug. 31, 1849.

s. d. s. d.

Flour, per bbl. 196lbs.	- - - - -	17	6	to	21	3
Wheat, per bushel, 60lbs.	- - - - -	3	6	to	4	0
Barley, per bushel, 48lbs.	- - - - -	1	6	to	1	9
Rye, per bushel, 56lbs.	- - - - -	2	6	to	3	2
Oats, per bushel, 34lbs.	- - - - -	1	0	to	1	4
Oatmeal, per bbl. 196lbs.	- - - - -	15	0	to	18	0
Pease, per bushel, 60lbs.	- - - - -	1	6	to	1	10
Potatoes, per bushel	- - - - -	2	6	to	3	0
Onions	- - - - -	3	6	to	5	0
Beef, per 100lbs.	- - - - -	17	6	to	20	0
Timothy, per bushel, 60 lbs.	- - - - -	6	0	to	8	0
Turkeys, each	- - - - -	2	6	to	3	9
Geese, each	- - - - -	1	3	to	2	6
Ducks, per couple	- - - - -	1	0	to	1	6
Chickens, per couple	- - - - -	1	6	to	1	9
Pork, per lb.	- - - - -	0	2½	to	0	3½
Ham, per 100 lb.	- - - - -	35	0	to	45	0
Bacon per 100 lbs.	- - - - -	36	0	to	40	0
Mutton, per lb., by the quarter	- - - - -	0	2½	to	0	4
Lamb per quarter-	- - - - -	2	0	to	3	0
Fresh Butter, per lb.	- - - - -	0	7½	to	0	9
Firkin Butter, per lb.	- - - - -	0	5	to	0	6
Cheese, per lb.	- - - - -	0	3	to	0	5
Lard, per lb.	- - - - -	0	4	to	0	4½
Apples, per barrel,	- - - - -	10	6	to	15	6
Eggs, per dozen,	- - - - -	0	6	to	0	7
Fowls, per pair	- - - - -	1	3	to	1	10
Straw, per ton,	- - - - -	25	0	to	30	0
Hay, per ton,	- - - - -	30	0	to	40	0
Fire Wood	- - - - -	10	0	to	12	6

Advertisements.

PROSPECTUS.

THE PROVINCIAL MUTUAL AND GENERAL INSURANCE COMPANY.

INCORPORATED BY ACT OF PARLIAMENT.

BOARD OF DIRECTORS.

ROBERT E. BURNS, Esq., *President.*
 J. S. HOWARD, Esq., *Vice-President.*
 W. L. PERRIN, RICHARD C. GAPPER,
 WM. GOODERHAM, JAMES BROWN,
 JOHN G. BOWES, FRANCIS NEAL,
 A. A. CLARK, J. C. MORRISON, M. P. P.,
 and CHARLES BERCZY, Esquires.

THE Stock of this Company is divided into the Mutual and Proprietary—the Mutual by the members giving premium notes upon obtaining Policies, and the Proprietary by having a subscribed Capital and issuing thereupon in the ordinary way.

THE MUTUAL BRANCH.

It has been felt throughout the Province, that Mutual Insurances have not been sufficiently restricted to render the system a favorite with the public; but this may be said to arise from the operations of the different companies being confined to each particular District. It is evident that these restrictions operate badly; for if it be desired to have nothing but equal risks, then the transactions must necessarily be limited to an amount which makes it unprofitable to become Policy-holders; and if it is desired to increase the business by taking unequal risks with others, then members are exposed to pay more than they would be required to do in other Companies.

If Mutual Insurances are taken upon property classed as extra hazardous with those termed not hazardous, although higher rates are put upon the former with a view to equalize them, it is obvious it has not such effect. This may be fully established by simply putting a class together, as for instance all the Mills of the Province, and ask whether such class would be desirous of mutually insuring each other, or whether they would not rather be joined with a goodly sprinkling of farmers as members. Again, ask the farmers and others of similar risks, whether they would not be willing mutually to insure each other without being obliged to pay for losses on extra hazardous property, and there can be no doubt what the answer would be.

The object of this Company is to equalize the risks so as to make it certain to policy-holders, that by insuring with this Company, they will not be called upon to pay such high rates as in other Companies. The Act of Parliament provides that no one risk shall exceed £500, and no insurance shall be effected on buildings and other property situated in blocks or exposed parts of Towns or Villages, nor on any kind of Mills, carpenters' or other shops, which by reason of the trade or business followed are rendered extra hazardous, machinery, breweries, distilleries, tanneries or other property involved in similar or equal hazard. It is expected to obtain nothing out the best description of risks, which in fact this Company is confined to by the charter; and as their operations will extend over the whole Province, and will thereby unite a most powerful and wealthy class, it affords to the public a security hitherto not attainable in this Province.

The principle now adopted by this Company has been acted upon in the United States for some years, and in consequence people have insured with the United States Companies to a very great extent. It is not, however, too late yet to prevent a great deal more money from leaving us, and if we are desirous to keep our means among ourselves, an opportunity is now afforded to every farmer and other person wishing to insure upon equal risks only, to do so upon the terms of knowing that he never can be called on to pay except for losses sustained upon property of equal risk with his own.

Agents of this Company will be named in all convenient localities; and the advantage of having an institution with all its officers under the supervision of the members themselves, and under the controul of their own laws, require no comment.

The rates have been placed upon the most favourable terms, and as low as can possibly be obtained in any Company whatever. For instance, the second class embracing the ordinary farm buildings and produce of the country, are fixed at one per cent. of the insured value, that is, if £500 be insured, the premium note will be £5 and the payment thereon £1 13s. 4d., with 7s. 6d. for the Policy and Survey—in all £2 0s. 10d.—which is the whole probable amount for five years' insurance, the future liability being in no case beyond the £5 for the whole five years.

Every facility will be afforded to persons wishing to insure, and if loss should happen, it will be found that the by-laws amply provide for the Insured.

The Directors are confident that they are now placing before the public, the means of effecting Insurances on property on more favourable terms, considering all things, than can be obtained elsewhere.

Applications may be made to the agents, or at the office of the Company, where every information will be afforded.

THE PROPRIETARY BRANCH.

The Capital is £100,000, divided into shares of £20 each, upon which five per cent. is required to be paid at the time of subscribing.

The Company is authorised to take Fire and Marine risks, and also to effect assurance on lives, and to grant annuities.

The Agents of the Company will be authorised to obtain subscriptions for stock; and as soon as a sufficient amount is obtained the Company will be prepared to take Fire and Marine risks.

It is well known to Merchants and others, that a large amount is paid annually to Foreign Companies, simply because the Insurance Companies established in the Province are not sufficient for the business. It cannot be supposed that the foreign companies would continue business in this Province if they did not find it profitable, and that circumstance abundantly affords proof, that there is room for another company, upon remunerative terms to the shareholders.

The Company is not confined in their Marine risks to the lakes and rivers of this Province, but has authority to insure upon the ocean as well.—This authority may afford to the merchant an easy mode of effecting insurance upon property at their own doors.

So soon as it can conveniently be done, it is the intention of the Directors to bring into operation the branch authorising the effecting of Life Insurances, and granting annuities. It has been stated that upwards of £10,000 a year is remitted to Britain for life insurance—this might be saved by proper attention to the subject. The large Capitals accumulated by the

Life Insurance Companies in Britain, prove them to be proper, and the best and most sure means of saving and making provision for families.

The Directors appeal to the public to consider the advantages thus offered by this Company, in uniting under one management, and at one expense, all the different branches of Insurance—and they confidently expect that they will not be mistaken in such appeal.

LIST OF AGENTS ALREADY APPOINTED.

Montreal.—C. BOCKUS, Esq.
 Gananoque.—W. T. MACDONALD.
 Kingston.—M. DRUMMOND, Esq.
 Prescott.—W. PATRICK.
 Peterboro'.—J. HALL.
 Belleville.—F. McANANANY, Esq.
 Oshawa.—S. B. FAIRBANKS, Esq.
 Scarboro'.—Mr. C. C. BOWEN,
 Sharon.—Mr. I. C. HOGABOOM,
 Bradford.—Mr. T. McCONCHY.
 Weston.—J. A. MACDONALD.
 Hamilton.—Mr JOSIAS BRAY.
 St. Catherine's.—A. K. BOOMER, Esq.
 London.—W. BUCHANAN, Esq.
 Drummondville.—R. R. HUBBARD.
 Stratford.—J. W. DALY, Esq.
 Goderich.—J. CLARK, Esq.
 Travelling Agent.—Mr. T. RYALL.

Toronto, July 25, 1849.

ROSEBANK NURSERIES,

NEAR AMHERSTBURGH, CANADA WEST.

THE Proprietor has for sale a most extensive assortment of all the best varieties of FRUIT TREES, Vines, Ornamental Trees, Shrubs, and Plants, Roses, Tulips, Hyacinths, &c. &c., which he will dispose of at very reduced rates, as low or lower than they can be procured any where else.

The Trees are well grown and exceedingly thrifty. The stock comprises a greater number of varieties than can be found in any other Nursery in Canada of Apples, Pears, Peaches, Plums, Cherries, Apricots, Nectarines, Grapes, Quinces, Gooseberries, Raspberries, Strawberries, Currants, Mulberries, &c. &c.

Catalogues will be sent to all post paid applicants, and the trees will be carefully packed, and forwarded to any part of the Province, with despatch, by the *Propeller Cathcart*, or otherwise, as may be directed.

Persons unacquainted with fruits would be better supplied by leaving the selection of varieties to the subscriber, mentioning the number of Summer, Autumn, and Winter varieties required, or any other instructions they may think requisite. Orders should be sent early, so as to allow of a good selection, and also that they may be forwarded by the first conveyance.

JAMES DOUGALL, *Proprietor*.

Rosebank, near Amherstburgh,
 1st September, 1849.

JOHN M. ROSS,

AGENT for Hall's Patent Moulding and Pressing Machine; also, for the Genesee Agricultural Seed and Implement Warehouse, Rochester, N. Y.
 City Wharf, Church Street, Toronto:
 20th March, 1849.

PAPER HANGINGS!

A LARGE and CHOICE assortment of PAPER HANGINGS, of the newest styles of patterns, for sale, wholesale and retail, by
 BREWER, McPHAIL, & CO.,
 46, King Street East.

Toronto, April, 1849. 5-lin.

NEW CARRIAGE FACTORY.

WILLIAMS & HOLMES,

HAVE REMOVED their *City Carriage Repository* to 142, Yonge Street, where they have commenced a Manufactory in all its branches. Parties wishing to purchase for Private or Public Business, are requested to give them a call before purchasing elsewhere, as their facilities are such as to enable them to manufacture cheaper than any other Establishment in Toronto.

Toronto, January 1, 1849.

N.B.—The public are respectfully invited to an inspection of their Lumber and other Building Materials, as none but the very best will be used.

MAMMOTH HOUSE,

Removed to the Store next door South of Mr. Elgie's Tavern, Market Square.

THOMAS THOMPSON is happy to inform the Public, that, by the praiseworthy exertions of his friends, he has saved from the destructive *Conflagration of 17th April*, staple and fancy DRY GOODS, GENERAL CLOTHING, HATS, CAPS, BOOTS, SHOES, &c. &c., to the amount of upwards of \$15,000! partially damaged, which will be sold at a great sacrifice. The above Stock, with the early *Spring Arrivals* now opening out, will comprise a splendid assortment of cheap and fashionable Goods, the whole of which he is determined to have cleared out previous to his re-opening the new Mammoth House.

Toronto, 17th April, 1849.

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No. 58, YONGE STREET, TORONTO

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(LATE C. ELLIOT.)

CONTINUES every Branch in the above Establishment, as heretofore; and, in addition, keeps constantly on hand a good assortment of Cooking, Parlor, Box, and Air-Tight Stoves, of the most approved patterns.

Also, a Second-hand Engine, with or without the Boiler, Twelve-horse Power, will be sold very cheap for Cash or short payment.

Toronto, Jan. 26, 1849. 1-1f

STOVES! STOVES!! STOVES!!!

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Also, a New Pattern Hot-air Cooking Stove, just received, taking three-feet wood, better adapted for the country than the Burr, or any other Stove now in use. It has taken the First Premium at every Fair in the United States, where it has been exhibited.

Ploughs, Sugar Kettles, Grist & Saw-Mill Castings, Steam Engines, Sleigh Shoes, Dog Irons, and a general assortment of Castings.

BOWSELL AND THOMPSON, PRINTERS, TORONTO.

CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. v. 9.

GEORGE BUCKLAND, }
WILLIAM McDougall, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, OCTOBER 10, 1849.

No. 10.

The Canadian Agriculturist,

A MONTHLY JOURNAL OF AGRICULTURE, HORTICULTURE, MECHANICAL AND GENERAL SCIENCE, DOMESTIC ECONOMY & MISCELLANEOUS INTELLIGENCE: Published by the Proprietors, W. McDougall and GEO. BUCKLAND, on the first of each month, at their Office, near the South-west corner of King and Yonge Streets, Toronto.

Subscription ONE DOLLAR, *in advance*. Advertisements 4d. per line each insertion.

Societies, Clubs, or local Agents ordering twelve copies and upwards, will be supplied at 3s. 9d. per copy.

Money, enclosed in a letter, and addressed to the "Editors of the Agriculturist, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, *need not wait to be called upon*.

Payment *in advance* being the only system that will answer for a publication so cheap as ours, we shall send the remainder of the volume to none but those who *order and pay for it*.

LOCAL AGENTS.—Any person may act as local agent. We hope that all those who have heretofore acted as such will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending *four* subscriptions. Those sending *twelve* and upwards will be supplied at 3s. 9d. per copy.

MESSRS. DENISON & DEWSON, Attorneys,
&c., New Market Buildings, Toronto.
January 26, 1849.

2

TORONTO NURSERY.

FOR SALE, an extensive collection of FRUIT TREES, consisting of all the choicest sorts of Apples, Pears, Plums, Cherries, Peaches, Grape Vines, Raspberries, Gooseberries, Strawberries, Currants, Asparagus, and Rhubarb Root, &c.

Also, Ornamental Trees, Flowering Shrubs, Hardy Roses, Herbaceous Flowering Plants, &c., in great variety.

Descriptive Catalogues, containing directions for transplanting, furnished *gratis* to post-paid applicants.

GEORGE LESLIE.

March, 1849.

4

CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash Prices for 1000 bushels clean Timothy Seed; 100 bushels clean Spring Tares; 100 bushels White Marrowfat Pea and 25 bushels Flax Seed.

JAMES FLEMING,

Yonge Street, Seedsman and Florist.
Toronto, Jan. 1, 1849.

1

WM. McDougall,
ATTORNEY, SOLICITOR, &c.,

South West Corner of
KING AND YONGE STREETS,
TORONTO.

Deeds, Mortgages, and other Legal Instruments,
promptly prepared.

IMPROVED DAIRY STOCK, AT AUCTION.

THE Subscriber will offer on the 13th day of October next, at 1 o'clock, P. M., at his Farm, from 30 to 40 head, being about one half of his present herd.

Their Breed is mainly the best Improved Short-horned, crossed with the Amsterdam Dutch—selected and bred expressly by the subscriber with reference to milking qualities.

They consist of Cows, two-year-old Heifers, one-year-old Heifers, Heifer Calves from one to ten months old, and several Bulls.

Cows and Heifers old enough, are in calf to the proper bulls.

A credit of six months will be given on all sums over fifty dollars, with interest, on satisfactory paper.

Stock purchased to be sent a distance, will be delivered by the subscriber on shipboard or rail-car, in the city of New York, free of risk and expense to the purchaser.

A Catalogue and description of each animal, will be given on the day of sale.

The awards of Premiums by the American Institute, and Westchester County Agricultural Society, give evidence of my success as a Breeder.

Conveyances will be in waiting at Fordham Depot, Harlem Railroad, to convey persons to the Sale.

L. G. MORRIS.

Mount Fordham, August, 1849;
Eleven miles from the City of New York, by
Harlem Railroad.

Should the weather prove stormy on the day of Sale, it will be postponed until the next fair day.

THOROUGH-BRED STALLIONS FOR SALE.

THE Imported Horse PANMURE, got by Gen. Grosvenor's celebrated horse *Glauco*, and out of Lord Chesterfield's celebrated mare *La Bayader*.

Also, the three year old Horse KINGSTON, got by imported *Panmure*, dam *Miss Barrie*, by Sir R. Barrie's imported *Daghee*, granddam *Sally Walker* by imported *Roman*, great-granddam by *American Eclipse*, g.g.g.dam by imported *Messenger*. *Miss Barrie* took the first premium for thorough-bred Mare at the Provincial Show for 1849.

PANMURE has proved himself an excellent Stock-getter in the Midland District.

The young Horse KINGSTON took the first premium for three year old thorough-bred Stallion at the Provincial Show of this year. Another colt by the same horse and dam, took the first premium for two year old thorough-bred Stallion; and some of *Panmure's* colts by common mares also took premiums at the same Exhibition.

For further particulars apply to the Editors of the *Agriculturist*, or to G. A. CUMMING, Esq., Kingston, C. W.

October 1, 1849.

TO BRICK MAKERS.

AN excellent opportunity offers itself for the purchase of an improved BRICK MOULDING MACHINE, with horse power, capable of Moulding from 20 to 30,000 Bricks per day.

ALSO:

TWO CLAY TEMPERING MACHINES, on a new principle, each Machine can temper a bed of clay, at one time, sufficient for 12,000 Bricks.

Apply (if by letter, *post-paid*.) to

ROBT. BEEKMAN, AGENT,
No. 6 Wellington Buildings.

Toronto, 6th September, 1849.

9-tf.

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ROWSSELL AND THOMPSON, PRINTERS, TORONTO.

THE CANADIAN AGRICULTURIST.

VOL. I.

TORONTO, OCTOBER 1, 1849.

No. 10.

ANNUAL SHOW OF THE PROVINCIAL AGRICULTURAL ASSOCIATION.

The Exhibition of the Provincial Association for 1849, was held at Kingston on the 18th, 19th, 20th and 21st of September, according to appointment. The weather was cool and pleasant during the Fair, affording a most agreeable contrast to the *wet* meeting at Hamilton. The grounds consisted of ten acres—part of a government reserve in the city—and were fenced off and arranged with taste and judgment. The show was, upon the whole, excellent—quite equal in most departments to any previous exhibitions—and afforded unmistakable signs of an increasing interest among all classes in the objects and benefits of the Association, and a determination to support it. The people of Kingston extended their hospitality with hearty good-will to the thousands of visitors who flocked from all points of the compass to their renowned city; every bed was called into requisition, and even sofas were found useful to rest many a zealous pedestrian, who had made too many circuits of the show-ground. We shall give a brief sketch of each day's proceedings, with a general review of the whole. It may be proper to state that Mr. Buckland, being the Secretary of the Association, and having had his time and attention completely taken up with the duties of his office, these remarks and the following reports are supplied by the assistant editor. They are not, therefore, to be considered official in any respect, but as the free, independent views of the writer.

THE FIRST DAY was occupied with the entries of stock, implements, &c., and the arrangement of the committees. Notwithstanding the published conditions with which competitors were required to comply, several animals and articles for exhibition did not arrive until Wednesday. This neglect is always productive of confusion in the Secretary's department, besides being unfair to those who conform to the rules, and bring their cattle, &c., in time. A good deal of unnecessary difficulty and delay occurred at the Custom-house, in getting the American articles entered. Messrs.

Rapalje and Briggs of Rochester, brought over quite a number of agricultural implements, which it was supposed, as the Government had given an order for that purpose, could be entered for exhibition without trouble; but so much difficulty was thrown in the way by the Customs officer, in the various precautions he thought it necessary to take to guard against a sale of any of the articles without payment of duty, that unless some simpler mode can be discovered, we need not expect our American friends to contribute to our shows hereafter.

SECOND DAY.—Wednesday morning, large numbers congregated about the gates, but, except the officers, exhibitors, and members of the Association, no persons were admitted until two o'clock. The Judges, in the meantime, were busy inspecting the various articles exhibited; but owing to the delays that had taken place in making the entries and ticketing the numerous objects offered for competition, they did not get through their examinations until the next day. We are not able to say what number of tickets of admission were sold on Wednesday, but we should judge that five or six thousand people passed through the gates during the day. In the evening, Prof. Johnston delivered a lecture at the City Hall. Some remarks thereon, and an outline of the lecture, will be found in another place. The visitors to the Fair were favored soon after dark with a fantastic display by a society of "Phisiogs," as they call themselves, who paraded through the streets of Kingston, bearing torches—some mounted on horseback, some in waggons, and others on foot. They were dressed and painted in the most outlandish style, and from what we heard, it would seem they have been in the habit of playing off similar antics for some time back.

THIRD DAY.—The number of visitors to the show-ground on Thursday was considerably larger than on any other day. The Secretary of the New York State Society (B. P. Johnston, Esq.), Col. Sherwood, and Mr. H. Wager, appeared as delegates on behalf of the State Society. Many other

American gentlemen paid us a visit also, and seemed much pleased with what they saw. In the morning a grand review of the troops took place on Barriefield-common. A large concourse of strangers assembled to witness the display, which was very imposing. Upwards of a thousand troops are now quartered at Kingston. After the review, which was some distance from the Fair ground, visitors again poured through the gates in a continuous stream, until the enclosed space was a moving mass of horses, carriages, cattle, and human beings of both sexes, and of all ages, sizes and characters. Fully a third more were upon the ground on Thursday, than on the day previous. The President, Mr. Sheriff Ruttan, delivered the annual Address from a stand in the middle of the ground, during the afternoon. It was somewhat lengthy, and embraced a variety of topics. It is much to be regretted that the President thought it necessary to make some allusions and reflections in the course of his address, calculated to hurt the feelings and offend the pride of the American delegates and visitors. It was thought by many—indeed we did not hear an opinion to the contrary—that they could very well have been spared from the address. We will do Mr. Ruttan the justice to say, however, that we do not think he intended to offend by his remarks; but such was undoubtedly their effect; and after so many attentions to Canadian visitors at the New York State fairs, and while a generous rivalry and much good feeling was springing up between the agriculturists of the two countries, which could not but be mutually beneficial, we deeply regret that any interruption from such a source should have occurred. After the address, the Secretary announced the names of the successful competitors in those classes in which the Judges had completed their awards and returned their books. The Dinner took place in the evening, which we regret to say was not so well attended as was expected. Very few American visitors were present, the greater number having left in the evening boats.

FOURTH DAY—Friday.—When we entered the grounds this morning, there was a bustle on all sides—the exhibitors looking after their stock, wares, &c., untying their bulls, collecting together their sheep and pigs, unscrewing machinery, and packing up for home. We observed several visitors purchasing tickets this morning, who had certainly come “too late for the fair”; nevertheless, they pushed into the ground at no small risk from the horses, waggons, carts and carriages that were hurrying to and fro, without any regard to

the locality of the “carriage road” or the orders of the Marshal, whose authority appeared by common consent to have ended. Their first was also their “last lingering look,” and the panorama of the Cattle Show passed from their view.

THE PLOUGHING MATCH

Was to have commenced at 10 o'clock to-day, on the farm of Mr. Flanigan, about a mile and a half from the city. A little before 12 we repaired to the spot, expecting to see a grand array of teams at work; but the ground had not yet been staked out, and those whose duty it was to superintend the operations had not arrived. A few persons volunteered their services, and assigned to the ploughmen their respective lands. There were some thirteen or fourteen entries in the class for men, and but *one* in that for boys. But such ploughs! and such teams and ploughmen, we venture to say were never before collected together at a ploughing match in Canada West. Their work fully justified the expectations we had formed of them. The land, to be sure, was not the best; it contained numerous small stones, and was of a loose gravelly texture; but a good ploughman will show his skill on such a soil as well as on the best: indeed it is under such circumstances that his skill is needed; and perhaps the fairest way of testing the merits of a number of ploughmen, is to set them at work in a field like that at Kingston. In the present case, every rule that was ever laid down to secure good ploughing, was violated; and every defect that could be imagined in a case of *bad* ploughing, whether in the construction or tempering of the ploughs, the training of the teams, or the skill of the ploughmen, was exhibited. We never saw such an exhibition before, and we trust we may never see its like again. In the first place, the lands were staked out at each end of the field, and the ploughmen were allowed to plant small stakes about three or four rods apart in a direct line between the two at either end, in order, we suppose, to run their furrows straight; but even with all this precaution, it was by some deemed necessary to get a man to *lead* their horses by the head! The competitors were extremely good-natured and accommodating, for each allowed the other to do as he pleased, without making the slightest demur. A yoke of oxen, with a worn-out Yankee plough, took their place with the rest, and, for aught we could see, did their work as well. Some of the ploughmen carried their reins in the old-fashioned way, over their head; others seemed to have borrowed new ropes for the occasion,

which were allowed to drag nine or ten feet behind—from an unwillingness, probably, to spoil them by cutting, and to add to the picturesqueness of the scene. The ploughs were either too new or too old; the new ones clogged and drew heavily, and the horses being light and badly trained, were obliged to exert their strength to the utmost. Every two or three rods a stone would knock up the plough, when away she would go for another rod at least, before the unfortunate ploughman could get her into the ground again. As to stopping the team and drawing back the plough to the place at which she was thrown out, this seemed not to be thought of. Of course, at the next round the sod was either unturned, or a divergence made to the right, exhibiting Hogarth's line of beauty to the admiring spectators. Some of the ploughmen adopted the former, others the latter alternative. As to the width of furrow, and the angle at which it was laid, every possible variety was to be seen at this ploughing match. The wide furrow, laid flat, or nearly so, was most in favour, though there were not wanting those who preferred to set the furrow on its edge, so that the growth of the grass might not be checked too suddenly, and leaving an agreeable alternation of fresh earth and green sod at every furrow. The ploughs were, with two or three exceptions, of the Yankee-Canadian pattern, the share and mould-board being of cast iron, and the stils or handles considerably longer than in the original Yankee. There were two or three iron Scotch ploughs on the ground, but they were in very bad trim, and did their work in a third or fourth-rate style. We observed also among the competitors a plough belonging to a species that we had long supposed to be extinct. This specimen had already attracted our attention on the Fair ground, where it was exhibited along with some of modern construction, to show by contrast, as we supposed, the progress of improvement. Its owner—a man of the last generation, who no doubt heartily despised the new-fangled inventions of the present day—was of a different opinion; and we must admit that the performance of his competitors was not calculated to remove his prejudice or shake his faith in the superiority of the past. There was but one circumstance that gave us satisfaction on this mortifying occasion. Mr. Briggs, of Rochester, who contributed largely to the implement department, was there with one of his best Yankee ploughs. When we saw the *tout ensemble* which our own people presented, and the exulting looks of our American friend, we trembled for the result. We, who had touched the vanity of our neighbours by the free-

dom of our remarks on their ploughs and ploughing at Buffalo, and ventured, on behalf of Canada West, to accept a challenge from persons who undertook to act on behalf of the great State of New York, but of which, by the way, nothing further has been said for some time—we, who had done this, to be placed in such a predicament! It was truly awful. But the horses were hitched, the ploughman took hold, and—our fears vanished: we felt that our country's reputation was safe, and again breathed freely. Three or four persons tried it in turn; an American ploughman was procured, but all in vain—this plough did the worst work in the field. Mr. Briggs himself seemed surprised at its performance, but was not able to better it.

We sincerely hope that higher prizes will be offered, and more pains taken to secure a good match at the next Exhibition. If the ploughing match at our Provincial Show is to be the subordinate and wretched thing we have just described, it had better be dispensed with; we shall only get ourselves into disgrace. It should be remarked, that the land in the neighbourhood of Kingston is very rough and stony, and good ploughing not much in request. The prizes were not such as to induce good ploughmen at a distance to leave home at so busy a season as the middle of September, and the competitors were consequently from the immediate neighbourhood, and they perhaps not the best.

THE EXHIBITION.

We come now to speak of the Exhibition itself—of the general character of the stock, and the quality and appearance of the articles in each department. Our remarks must be brief and general, for the simple reason that we found it impossible to get information that would enable us to be *particular*. Several members of the press complained of the same difficulty. This evil might be remedied to a great extent by a very simple rule, which we hope to see adopted by the executive committee of the Association, and enforced at our future shows. It arises from the neglect of the owners of cattle, implements, &c., to *ticket* them with the owner's or maker's name, age and breed of the animal, and name and use of the implement, &c. &c. A person enters the show-ground; he sees a number of horses prancing about—a lot of bulls tied to posts or held by ignorant boys, who can give you no information about them, at least none that you can rely upon; he passes on to the pens of cows, sheep, hogs, &c.; he may look in, but except perhaps "Class H., Leicesters," or "Class J., pigs," he can learn nothing of their history or owner. Of course, if you happen to meet with the

owner, which not one visitor in a hundred is likely to do, your darkness may be enlightened. Now, an easy remedy would be, to make it imperative upon all exhibitors to attach a ticket or label, with certain specified particulars legibly written thereon, to every distinct article entered for competition. It would be to the interest of the owners to do this, as it would receive a special notice by the press in many cases, as well as a more thorough examination by the spectators.

HORSES.—The show of horses was never surpassed in this country—especially in the class for agricultural purposes. The famous *Clyde* was there, with one of his progeny of similar colour and nearly equal proportions. *King Alfred*, a beautiful bay, owned by Mr. Ashford of this district, is a splendid animal: for a horse of all work, such as our Canadian farmers approve, he is almost faultless. He has a rather small eye, which lacks boldness; his head too is not quite unexceptionable; but with these exceptions, we could not discover a bad point. He took the first prize, and, we think, justly. We believe he was at Syracuse, and obtained a prize in the foreign class. We were much pleased with a beautiful iron-grey, belonging to the Cornwall Agricultural Society. He was imported from Jefferson county, New York, and cost the Society £100. He is all action, well proportioned, good size, and well adapted for the carriage or saddle. A two year old colt, from the Wellington district, astonished all by his tremendous proportions, while at the same time his carriage was light and graceful. Many persons would not believe the owner's statement as to his age. He took the first and only prize in his class. Blood horses were well represented—not by numbers, but quality. *Mercer*, owned by John Gibson, Jr., of Niagara district, carried off the first prize. He is 13 years old, 15½ hands high, and in colour a rich mahogany brown. He was imported from England by Commodore Stockton of the United States navy, at 1 year old. He was sired by *Amulus*, and belonged to the stud of William IV. His present owner purchased him about three years ago, and paid, as he asserts, £750. He is insured for more than half this sum, or we should be disposed to say that Mr. Gibson had made an *unsafe* investment. *Mercer* is a little sprung in the knees, and shows the marks of age in other respects, but we heard good judges assert that there is no better blood in America. Mr. Cumming, of Kingston, showed a couple of blood colts that will no doubt perform exploits on the race-course; but we confess our partiality for the useful and the strong, rather than the fanciful

and the swift, in horse flesh: a combination of these qualities, as exhibited in *Hunter*, the Cornwall Society's horse, accords best with our taste.

DURHAMS.—*Bulls.*—The animals in this class were very good, and quite numerous. The average excellence of the whole number was high, but it did not strike us that any individual exhibited a marked pre-eminence. A two year old bull from the neighbourhood of Cobourg gives promise of great merit at maturity. The bull belonging to R. Wade, Esq., of Hope, to which was awarded the first premium, is a fine animal. Mr. Nightingale's bull, *Sir Charles*, for size, symmetry, and good points generally, was in our opinion entitled to the third prize at least; but he was objected to, as we have heard, on the ground of impurity of blood. He was bred by Mr. Mair, of Barrie, whom we have heard assert the purity of his ancestors on both sides; but we think there can be but little doubt of his having Devon blood in his veins, and he may therefore be fairly open to objection in a Durham class. The young bulls made a good show—an encouraging feature in this Exhibition, which we believe is one of the good results of these annual meetings. We may expect in two or three years to find good stock of the improved breeds in every township of the province. *Cows.*—We noticed two or three first-rate animals; but as a whole, we think there was a falling-off from previous shows. Nearly all the Durham cows and heifers offered, belonged to Mr. R. Wade, sen., Mr. R. Wade, jun., and Mr. John Wade, all of Hope, Newcastle district. These gentlemen deserve great praise for their spirited efforts to improve the stock of their neighbourhood. All the prizes, with one or two exceptions, in these classes fell to them.

DEVONS.—The number of Devon cattle was not greater than usual, and the quality about the same. Mr. Ewart of Dundas, Mr. Masson and Mr. Burnham of Cobourg, were the only competitors. We cannot particularize individuals, for the reason already given; nor can we describe even the colour of the animals which took prizes. In the case of Devons we might, to be sure, *assume* that they were *brown*, but we could not ascertain what particular animal had obtained prizes till the Fair was over. This is another great defect which ought by all means to be remedied. Every possible effort should be made to get the judges' awards by the evening of the second day. When the public is admitted on the third day, the prize animals should be distinguished by appropriate marks. Unless this be done, half the interest,

and, we might add, half the usefulness, of the Exhibition is lost.

AYRSHIRES were better represented than at either of the previous exhibitions of the Association. Until last year, if we mistake not, no premiums were offered for this excellent breed. Both they and the Herefords seem to be neglected in Canada, though probably they are better adapted to the country for *all* purposes than either of the other breeds. We had expected to meet our friend Soetham, from Black Rock, New York, with a few of his splendid herd of Herefords, but were disappointed. He will no doubt pay us a visit next year, and give our farmers an opportunity of *seeing* some pure specimens of that noble breed, which has for some time occupied the *first* place in the markets of Smithfield.

GRADE CATTLE.—These made a tolerable show, those in the young classes being the best. We hope to see hereafter much more numerous exhibitions of grade cattle. We believe that crosses of the Durham and other improved breeds, with the best milking families of our native cattle, will be found most profitable for the common farmer. Amateurs, or “gentlemen farmers,” as they are called, may patronize the *pure* breeds exclusively, but we are far from despising a good *cross*.

SHEEP.—Leicesters were most numerous. Two of these pens were first-rate; but as a whole, the sheep of the different breeds were below our expectations. Mr. Miller, of Markham, showed a few choice animals of the Leicester breed. We noticed also a very fine shearling ram, belonging to Mr. Cameron of Garden Island. South Downs were not more than ordinary. The fine-woolled varieties were few in number, but, so far as we could judge, of good quality.

PIGS.—We never saw a better display: it seemed as if the choicest specimens of the several breeds had really been selected. In the other classes we saw individuals that might be matched by a selection from the yard of almost any good farmer, but it would require some pains to find the equals of the Berkshires and large breeds exhibited on this occasion. The pigs of 1849 were perfect beauties.

FAT CATTLE, SHEEP, &c.—The fat cattle exhibited were nothing to boast of; we have often seen better in the Toronto market. Working oxen made a good show, but we saw none worthy of particular notice.

IMPLEMENTS.—Taken as a whole, the show of agricultural implements was very creditable. Evidence of improvement in this important branch of *home* manufacture, was clearly traceable in the display of this year. Ploughs were exhibited in

almost every variety; some well constructed iron ploughs, and other iron implements, from the shop of Mr. Fleck of Montreal, attracted great attention. There were also imported iron ploughs exhibited, from the foundry of Mr. Grey, the celebrated Scotch implement maker. The wooden Scotch plough so much in favour in this part of Upper Canada was not well represented; we observed but one good specimen, which was made, as we have since been told, by Mr. McTavish of Darlington. A double-mould board plough and cultivator combined, by Mr. Newton of Cobourg, was an object of considerable curiosity to the farmers. These manifold implements, however, are not in our opinion the most desirable or convenient. Fanning mills, stone cutters, cultivators, reaping machines, horse powers for various purposes, cheese presses, churns, seed drills, root cutters, and dozens of smaller contrivances for facilitating the many operations of the farmer, were all there in their most approved forms, inviting the inspection of thousands of visitors. A portable grist mill, known in the States as “Fitzgerald’s patent portable Burr stone mill,” was exhibited by Mr. Ross of Syracuse, New York. The mill, without the bolting apparatus, costs \$100, and is capable of grinding ten bushels of wheat in one hour. The proprietor had several medals awarded by the American Institute, New York city. He showed some flour ground by this mill, which took the premium at Syracuse; it was certainly of a very fine quality. For new settlements, this invention will supply a desideratum. Mr. Ross, indeed, asserts, that when its merits become known, every farmer will be his own miller. He says it is about being put up in one of the large flouring establishments at Rochester, in the place of the common flat Burr stones, after which, if it *proves* its superiority, we have no doubt it will come into general use. We may hereafter give a cut, and a more full description of this interesting machine. Messrs. Rapalge & Briggs, of Rochester, exhibited the best assortment of agricultural implements on the ground. Their ploughs were well made, but the pattern will not go down with Canadian ploughmen; they are only adapted for cross-ploughing. Palmer’s and Pennock’s grain drills (price \$60) will be more sought after as they are better known. Mr. Vale, of Toronto, exhibited a number of tools and implements of excellent construction, and greatly admired for their beautiful finish. We have not space to particularize in this department, but refer the reader to the prize list, on another page, for the *names* of the successful competitors.

DOMESTIC MANUFACTURES.—This department was admitted by all to be deficient in the variety and number of articles. The quality of those exhibited was highly creditable. The blankets, counterpanes and cloth, from the manufactory of Mr. Gamble, were all that could be desired; but we were much disappointed to see so little competition. Mr. Drummond, of Toronto, showed some beautiful furniture, as also did Mr. Botter of Kingston. An excellent assortment of stoves, scales, and other articles, was exhibited by Mr. Spencer of this city. Forks, axes, and other tools, were quite numerous and of excellent quality. Mr. Spencer's hot-air apparatus, and the model of a threshing machine, attracted a good deal of attention. We trust our woollen manufacturers will not be so backward next year.

HUSBANDRY.—In this department the display was good, but not extra. We saw two or three very fine samples of wheat, and some very poor ones—we heard several farmers say that they had much better in their barns. The Canada Company's liberal prize of £25, ought certainly to excite more general competition: Mr. Freeman was very near taking off the prize for the *third* time. Butter and cheese—the former especially—were first-rate in quality. We missed the famous Stilton of our friend Mr. Parsons. Two bottles of mustard, of home growth and home manufacture, attracted some notice. We have tried this mustard—made by Messrs. Crawford & Imlach, Niagara district—and pronounce it excellent. We hope they will be able to supply the Canada market, as no one can wish a better article. The hops exhibited were said to be of good quality and well cured. The corn, pease, &c., were not worthy of particular notice.

Of the contents of Floral Hall, we can hardly trust ourselves to speak in this number; we shall need two or three pages, to do them anything like justice. This was the great centre of attraction for the old and the young—the resident of the city and the farmer from his plough. The ladies' handiwork was beyond all praise, and exceeded all former exhibitions. The paintings, drawings, and other works of art, were highly spoken of by those who professed their ability to judge. The fruits and vegetables, to which we chiefly directed our attention, as we were crowded along by the immense mass of human beings constantly moving round the stands, were all so good, that the judges must have had considerable difficulty to decide respecting them. Amongst the articles exhibited in the Horticultural department which did not obtain prizes, we noticed some very fine speci-

mens of black Hamburg and black St. Peter grapes, from the hot-houses of W. B. Jarvis, Esq., Rosedale, Toronto; some very fine long blood beets, from Messrs. Leslie & Gordon, Toronto; a dish of very large white egg plums, from Edwin Baldwin, Esq., Toronto; some excellent winter cabbages, from William Daniel, and Mr. Sherwood, Toronto; and a few specimens of choice apples, from James Fleming, Toronto. There were also some very fine roots of the new yellow globe mangel wurtzel. The season was early for showing Swedish turnips, still the samples shown did credit to the growers. The prize parsnips were the largest and best grown we have ever seen; and the two large pumpkins—one 260 lbs., the other 202 lbs.—grown by Captain H. Shaw, Oakhill, Toronto, were much admired. We would also notice a very fine bunch of white grapes—over 2½ lbs.—grown in the open air, by Mr. Thompson, near Bytown; they were awarded the second prize, and well deserved it. There were no flowers worth looking at, the season being late and unfavourable for such productions: in fact, the only flowers exhibited were a few faded specimens of cut flowers, from the nurseries of Ellwanger & Barry, Rochester. We find it impossible to mention the names of all the competitors, and must again refer to the premium list. There were several miscellaneous articles, that contributed greatly to the interest of the show, of which we should like to speak; but our printer already complains that he has got too much matter. We may allude to these things in a future number.

The next Show is to be held in the Niagara district—probably in the neighbourhood of the Falls. A tremendous turn-out may be expected. Let the farmers of Canada show what they have done, and what they can do, on that occasion.

The Officers of the Association for 1850, are the following:—

JOHN WETENHALL, Esq., M.P., Nelson, *President*.
J. B. MARKS, Esq., Kingston, 1st. *Vice-President*.
T. CLARK STREET, Esq., Niagara Falls, 2nd *V. P.*
T. G. RIDOUT, Esq., Cashier B. U. C., *Treasurer*.
GEO. BUCKLAND, Esq., Toronto, *Secretary*.

A-SUBLIME TRUTH.—Let a man have all the world can give him, he is still miserable, if he has a grovelling, fettered mind.

Let him have his gardens, his fields, his woods, his lawns, for grandeur, plenty, ornament and gratification; while at the same time God is not in all his thoughts.—And let another have neither field nor garden; let him look at nature with an enlightened mind—a mind which can see and adore the creator in his works, can consider them as demonstrations of his power, his wisdom, his goodness, and in his poverty, he is far happier than the other in his riches. The one is but little higher than a beast, the other but little lower than an angel.

At a meeting of the officers and delegates of the Provincial Association held in the Committee Room, on the Show-ground, at Kingston, on Friday, September 21, the president, Henry Ruttan, Esq., in the chair, when the following resolutions were adopted:—

1. Moved by Mr. E. W. Thomson, and seconded by the Hon. Adam Fergusson, that John Wetenhall, Esq., M.P.P., of Nelson, be President for the ensuing year.

2. Moved by Mr. Asa. A. Burnham, and seconded by Mr. D. Matthews, that J. B. Marks, Esq., of Kingston, be first Vice-President.

Moved by the Hon. Adam Fergusson, and seconded by Mr. Wm. McMicking, that Thomas Clark Street, Esq., of Niagara Falls, be second Vice-President.

4. Moved by Mr. Robert Watson, and seconded by Mr. John Wair, that T. G. Ridout, Esq., be Treasurer for the ensuing year.

5. Moved by Mr. Marks, and seconded by Mr. R. L. Denison, that Geo. Buckland, Esq., be Secretary for the ensuing year.

6. Moved by Mr. E. W. Thomson, and seconded by the Hon. Adam Fergusson, that the next Show of the Provincial Association be held in the Niagara District; the place to be determined by the Directors, at the annual meeting in February.

7. Moved by Mr. Clapp, and seconded by Mr. Saylor, that the next Exhibition be held during the third week of September, 1850.

8. Moved by the Hon. Adam Fergusson, and seconded by Mr. Angus Cameron, that the thanks of the Association be given to the President for the excellent address delivered by him yesterday, and that he be requested to furnish a copy to the Editors of the Agriculturist for publication.*

9. Moved by the Hon. Adam Fergusson, and seconded by Mr. Thomson, that the best thanks of this meeting be given to the Executive Committee for their zealous and valuable services.

10. Moved by Mr. Thomson, and seconded by Mr. John Wetenhall, that the best thanks of this association be given to Mr. March, of Scarborough, for presenting the Canadian Coffee Plant at this Exhibition.

11. Moved by Mr. Marks, and seconded by Mr. Wheatfield, that the best thanks of the Agricultural Association be given to the Canada Company for the continuance of their liberal subscription of £25, for the best 25 bushels of Fall Wheat, the produce of Canada West.

12. Moved by Mr. John Wetenhall, and seconded by Mr. E. W. Thomson, that the Secretary of the Executive Committee be directed to distribute the Canada Company's prize wheat, among the Districts represented at this meeting.

13. Moved by Mr. Briggs, and seconded by Mr. J. W. Rose, that the Secretary be empowered to prepare reports of the proceedings of the Association, and that a committee be appointed, with whom the Secretary shall confer, such Committee to consist of Messrs. Sheriff Ruttan, John Weten-

hall, and E. W. Thomson, with power to add to their number.

14. Moved by the Hon. Adam Fergusson, and seconded by Mr. E. W. Thomson, that His Royal Highness, Prince Albert, be elected an honorary member of the Agricultural Association of Upper Canada.

15. Moved by Mr. Marks, and seconded by Mr. Thomson, that the following By-Law be submitted for adoption by the Board of Directors at their annual meeting in February next:—

BY-LAW.

Whereas by Act 10 & 11 Vic. cap. 61, sundry persons therein named were incorporated under the style and title of "The Agricultural Association of Upper Canada," for the purpose of the improvement of agriculture, and the encouragement of domestic manufactures; it is provided by the second clause of the above named Act, that the Constitution may be amended under certain regulations therein mentioned; and whereas it will facilitate the business of said Agricultural Association by making the following regulations:

1st. Be it enacted, &c., That from and after the passing of this By-Law, there shall be an Executive Committee chosen, to consist of not more than fifteen nor less than eleven members, five of whom shall constitute a quorum for the transaction of business; and that the office bearers of the Association, and ex-presidents shall at all times be members thereof.

2nd. Be it, &c., That the Executive Committee appointed in any district for the purpose of managing the business of the annual Exhibition, shall have full power for that year, of providing and making all the necessary arrangements connected therewith, in the same manner and with the same authority as can be done by the original Board of Directors.

3rd. Be it, &c., That so soon as any committee of management shall be appointed for making arrangements for the annual Exhibition in any district, they may commence their meetings and choose a chairman, secretary and treasurer. A minute book, recording the proceedings of each meeting, to be kept by the secretary of said Committee, and after every annual Show, to be delivered to the Secretary of the Association, to be kept among the records in his charge.

4th. Be it, &c., That said Committee shall have power to enclose such ground and erect such buildings, either by contract or otherwise, as they or a majority of them shall agree upon, for the purpose of holding the annual Show; and they shall be empowered to collect money, and receive subscriptions in aid of the funds of the Association, and pay premiums, and do all manner of things that may be required for effectually carrying on the business of the Association; and no member of the Executive Committee of Management shall be concerned in any contract or work of profit, directly or indirectly, as surety or otherwise, ordered to be performed for the use of the Association.

5th. Be it, &c., That the treasurer of the said Committee shall be required to give security for

* The address reached us too late, and is too long for the present number; it shall appear in our next.

the safe-keeping of all monies in his hands, and shall keep a correct account, under specific heads, of all monies received by him either from the Secretary or Treasurer of the Association, her Majesty's government, other districts, private subscriptions, and every other source, as well as of all disbursements made and premiums paid, the erection of buildings, hiring and renting of houses if required, and all other necessary expenses, and the balance of money in his hands remaining (if any) to be paid over to the Treasurer of the Association, or to the treasurer of the next Executive Committee, as shall be directed by the next General Board—the said account to be made up in the shape of an account current, and transmitted to the Secretary of the Association, to be kept among the records in charge of that officer.

6th. Be it, &c., That whenever the annual Exhibition shall have been voted to be held in any district in the province, the Executive Committee shall call to their assistance the Secretary of the Association, who will furnish from the records such information as the Committee may desire for the purpose of making the necessary arrangements for the forthcoming Show; and the said Secretary of the Association shall, if required, attend in person at the place appointed for the annual exhibition, as often as the Executive Committee shall require.

7th. Be it, &c., That the subscribers and members of the agricultural societies of the district wherein the annual Exhibition may be held, shall be also members of the Association for that year, and have badges accordingly provided; the agricultural societies of the district shall devote their whole funds for the year, including the government grant in aid of the Association. And the office-bearers of other district societies that shall have made donations, or contributed towards the provincial show not less than 25% for that year, shall also be furnished with badges of membership for free entry into the grounds of the Exhibition.

8th. Be it, &c., That after every annual Exhibition, the Executive Committee shall prepare and transmit a report to the Secretary of the Association, detailing the particulars of their proceedings and arrangement, the said report to point out from time to time any defect in the by-laws, and recommending such alterations and amendments as they may deem expedient for conducting the business of the annual Exhibition.

9th. Be it &c., That the premium list, as well as rules and regulations for conducting the show, shall be prepared for the current year by the general board, at their annual meeting in the city of Toronto, in the month of February, and circulated through the province as early as possible.

INFLUENCE OF MANURE ON ROOTS.—Hoare, in his *Treatise on the Vine*, states that a bone was placed in a vine border, surrounded by dry clay. The vine sent a root directly through the clay to the bone. In its passage it threw out no fibres, but when it reached the bone, which was rich in fertilizing material, it sent out minute ramifications, and by degrees entirely covered it.

PROFESSOR JOHNSTON'S LECTURE.

On Wednesday evening, the second day of the Fair, Professor Johnston delivered a very interesting Lecture in the City Hall. Owing to some oversight no suitable preparation had been made for the occasion—even seats, except a few which were in the room, had not been provided, and until within a few minutes before the hour appointed for the lecture, the persons about the premises did not seem to know that such an occurrence was to take place. Thirty or forty persons, among whom was the writer, strayed into an adjoining room, used as a place of worship, where they remained for half an hour, expecting every moment to see the Professor, until the ladies began to assemble for prayers, and thus made them aware of their mistake. We mention these circumstances, not merely by way of complaint but to account for the thinness of the audience, and in the hope that such things will be better managed hereafter.

The audience, though small compared with the number of persons in the city who were anxious to hear Professor Johnston, was composed of some of the most intelligent of the citizens, and many of the best farmers in the country. The President, Mr. Rutten, occupied the chair. The Hon. Adam Fergusson, E. Thomson, Esq., Ex-President of the Association, J. B. Marks, Esq., and several other gentlemen, had seats on the platform.

Professor Johnston was introduced by the President, and began by an allusion to the difficulty under which he laboured in attempting to address an assemblage of Canadian farmers in a practical or profitable manner, with but a slight knowledge of their situation or the peculiarities of their soil and climate. He had but just come from the New York State Fair at Syracuse, and consequently had seen but little of Canada.

The Professor then referred to the variety of subjects on which, from his past pursuits, he might be expected to address them, but as it would be impossible in the short space of a single lecture, to communicate much scientific information to those who had not already devoted considerable attention to the subject, he would confine himself to a few points of a practical character, applicable to the situation and wants of Canadian farmers. [We must here state, that the learned Professor's lecture was chiefly extempore, and being unable to obtain a table or a candle, the writer was obliged to scratch down a few notes on the top of his hat. We can, therefore, give but a very meagre outline of the lecture, and do not pretend to give precisely his language.]

The learned lecturer said, there were three considerations of great importance to the farmer in this country. The causes which had, in many places, produced a sterile condition of the soil; the means to be used to prevent exhaustion of the soil; and the means to restore it. Most of the early settlers were but little acquainted with the proper means of either preventing exhaustion or restoring to the soil its exhausted elements. The earth yielded abundantly, and they thought it would continue to do so. Their sons grew up in the same belief, and from their situation were not apt to know more than their fathers. Another reason for neglecting to study the means of preventing the exhaustion of the soil was, the well known fact that the farmers were in the habit of selling their worn-out farms and moving off to new land. This was the character of the early farmers in the Eastern States, who seemed to have no attachment to the soil. Again, the farmer probably thought he was not called upon to do any thing for posterity, as posterity would do nothing for him. It was very evident that the produce of wheat in New Brunswick, New England, and western New York was falling off; and though this failure is often attributed to natural causes, exhaustive culture is the main cause. If he were to enter upon a consideration of all the causes

which produce exhaustion, it would occupy the whole evening; he would, therefore, briefly consider the means by which the productive powers of the soil may be maintained.

The use of lime had in many cases restored land.—He had often, at home, seen the best results from the use of lime. The use of bones, in various ways, restored land that had become incapable of producing corn—by which he meant all kinds of grain. In some parts of Canada he believed bones had been used, and had been found to improve the land for the production of wheat and other grain. He would take the opportunity to make the matter plainer by briefly explaining the principles of the action of bones, &c. If, for instance, you take a lucifer match and strike it, white fumes will arise forming phosphoric acid. Now, one bushel of wheat contains a pound of this substance—phosphoric acid. The growing of grain for a long series of years on the same soil, exhausts this substance. Bones contain phosphoric acid in large quantity, and actually restore to the soil this substance—the very thing, the absence of which makes it fail to produce. Another mode by which exhaustion may be prevented, and is commonly restored, is the application of manure. In the course of his journey to attend the Fair at Syracuse, he had seen land on which crops of corn had been grown, with nothing beyond the occasional application of manure, for 50 years. In the neighbourhood of Pictou, N. S., and Prince Edward's Island, he had also seen land on which successive crops of corn (wheat, oats, &c.) had been raised for 50 years and upwards. However such a system may be carried on, it is like taking money out of your purse, and if you go on will certainly exhaust it. The way to prevent this result, and to make your land produce good crops, is to adopt a proper rotation and a better system of manuring. Gentlemen would know, better than he could tell them, the extent to which this system had been carried on here. In this country, so favourable for the growth of wheat, the average yield was not, as he had been informed, 15 bushels per acre. In parts of the neighbouring State of New York, the average was not 10 bushels; and taking the whole State the average was not 15 bushels. In England it was not uncommon to raise 50 bushels on an acre. He believed in many parts of Canada the land would grow 40 bushels to the acre; and he could see no reason to doubt that the soil of Canada, adapted to growing wheat, might be made to produce an average of 30 bushels.

Another method of repairing the effects of exhaustion is, the adoption of a better system of husbandry generally. This, among other things, includes a proper system of rotation, selection of the best varieties of wheat and other grain, and giving proper attention to the other points to be attended to in the general details of farming, such as ploughing, drilling, hoeing, procuring suitable implements, &c., &c. Now, how is this improved system of agriculture to be introduced, and its general adoption by the farmers of the country to be brought about? By diffusing information, by spreading knowledge among them. One of the sources of this knowledge is your primary schools. But knowledge may be diffused by other methods also. For example, by means of societies such as this. Agricultural Societies, both great and small, do good by diffusing some kind of knowledge. When the average amount of knowledge possessed by these societies is considerable, every man finds his own stock greatly increased. Another means is, the establishment of societies for discussion, like our Farmers' Clubs at home and in the United States. Questions of practical importance are discussed—the information elicited becomes common property, and advances the general good. Individual emulation is excited; each tries to outdo his neighbour; their land is cultivated better, and improvement spread over a

wider field. Larger Societies like this are also useful, in exciting emulation between townships and districts. The man who thinks himself the largest cock on the dunghill at home, when he comes here finds himself very small. By meeting together in large numbers you obtain a great amount of intellectual and moral power, through the united labours of the most industrious and the most intelligent of your class.

Another mode is, the diffusion of agricultural literature, by the general circulation of such useful periodicals as the *Canadian Agriculturist*. Indeed, this is one of the very best modes of diffusing knowledge among farmers.

Gentlemen, said Mr. Johnston, permit me to make one observation in reference to your own society. All large societies like this, should have some memorial of its transactions and progress from year to year. The Agricultural Society of Scotland, the Royal Agricultural Society of England, the German Agricultural Societies, the French, and even the Russian Societies keep journals of their transactions, which are printed and extensively circulated. But he would rather draw their attention to the transactions of the New York State Agricultural Society. [The learned Professor here exhibited a copy of the work, which had been presented to him.] This volume contains 979 pages, and though in so large an amount of matter there may be some nonsense, there must necessarily be a great amount of valuable information connected with the State of New York. Many of the papers are drawn up with judgment and skill. Every State has something special which needs to be ascertained and recorded. Whenever your funds permit, you should by all means publish your transactions, which would stimulate members to make experiments in order that they should be known. Your Legislature might be induced to publish your proceedings, properly prepared, as in the State of New York, gratuitously, or at the public expense, and no doubt a large amount of good would result from their circulation. These are some of the modes of repairing the effects of exhausted soils, and to find out and adopt means to prevent your new lands from becoming exhausted. Another practical point he would mention,—considerable benefit might be derived from drainage. There are two kinds generally adopted. The first and most simple kind is surface drainage, resorted to for the purpose of carrying off the water of springs, bogs, &c. This kind of drainage, he was told, would in Canada answer for most purposes, such as draining swamps and low grounds. The second kind was called thorough drainage, and was much practised in England and Scotland. It had been found very profitable. He would not, however, recommend its general adoption in this country. The money value of land is much less here, and labour being high, the cost of thorough drainage would buy new land. But the time will come when new land will become old, and then thorough drainage will become necessary. The second epoch in drainage, viz., thorough draining, has not yet made much way in continental Europe. The first system has been introduced very widely. All of you have probably read something of the nature and principles of draining.—When land is covered with water it is cold. If he should pour water from the glass before him upon his hand, it would become cold—the heat being carried off by evaporation. The same thing happens to land saturated with water. The heat which the plant requires is taken off by the evaporation of the water. Now, it is important that grass, &c., should grow rapidly, which it cannot do if the soil is kept too cold. Besides, on dry land a ton of grass will go much further as food for cattle. If you were placed in a bog you would find yourself grow cold, and you would become warm on a hot soil. It is the same with your cattle. Animals will eat more on cold soils than on those which are dry and warm,

and yet not thrive so well. On cold, wet land the animal becomes cold also, and a large portion of what he eats goes to supply the warmth of which he has been deprived. Upon dry lands also, the farmer can get in his seed earlier. A great deal of the failure in growing wheat was owing to rust, which was more destructive in moist situations. The Genesee Valley, though celebrated for the production of wheat, was in many parts subject to the attack of rust; while upon the uplands no fear of rust was entertained. Thus one of the most formidable enemies of the wheat grower would no doubt ultimately be overcome by proper draining.

There was another thing which occurred to him might be introduced more extensively with advantage, in all the Provinces, viz., the growing of green crops, such as mangel wurtzel, carrots, &c. In your Province, if you keep much stock through the winter, they eat up the produce of the summer. The hay crop had failed this year in New Brunswick, in some of the States of the Union, and he believed it had also failed to a considerable extent here. Farmers must, therefore, see the importance of providing more food for their stock. Experiments at home had proved that the same extent of land would produce a far greater amount of food in the shape of green crops. It was more profitable to keep stock over winter, if sufficient food could be raised on the farm, than to sell at a sacrifice in the fall. He did not intend to lay down rules or dictate to his hearers, in a matter of this kind. He threw out the hint, and their own judgment and experience would guide them. In Scotland agriculture is now in a highly advanced state. But fifty years ago, the farmers there were in the same state as to green crops, that you are now. They were obliged, for want of food, to kill their cattle in the fall, and in the spring of the year no good beef was to be seen in the markets. Since the cultivation of green crops, every farmer keeps his stock during winter. Why may not you, by adopting a similar practice, do the same, with profit and success?

Another point not unworthy of consideration is the want of good markets, so universally complained of, not only here but also in the State of New York. In many parts of the country the only thing wanted to obtain a market is to give your produce legs, by which it could get to market of itself. He referred to the beef and pork of the Western States, which were driven to a convenient point on its legs at a little cost. Thus you see how all these different points are connected one with another, in the improvement of your agriculture.

There was another point to which he would direct their attention—improvement in agricultural implements. He was much interested with the implements he had that day seen in the show yard. Many of your implements have been defective; but it was evident a great improvement is taking place. If you set a mechanic to work with a bad tool, he not only does his work worse, but he takes a longer time to do it. The employer in such a case pays far more than is necessary. He would save money by improving the implement. And so it is with the farmer.

He had thus, he said, selected a few practical points for their consideration; but he would also like to address them on one or two of the moral points of agriculture. They were such as applied to every country. He referred to the low position which the agricultural body occupy in intelligence. The remark was equally applicable to the farmers as a body at home. The great distinction was to be found in the training of the intellect. The opinion prevailed, he believed, over a great part of North America, that the agricultural body was less intelligent than other classes. Now it was not because they were naturally less capable of intellectual improvement. He had been much among agriculturists in other

countries, and he had found as much intellect among them as among any other class. But the real difference is, that their intellects are less cultivated, especially in regard to school learning. The Professor remarked, that he might tell them something of the condition and mode of conducting schools at home; but they knew better than he how far their schools here were adapted to the improvement and elevation of farmers. One difficulty in the way of intellectual and social improvement is, that farmers are scattered over a wide space and have less opportunity to study. Another great evil is, that the education of the agricultural classes has been neglected, because it has been supposed that agriculturists do not require education. This is a great mistake. This false notion had long existed at home; and if one boy of the farmer's family showed more cleverness than the rest, he was made a minister or a lawyer, while the most stupid was thought quite smart enough for a farmer. He found the same opinion prevailed in America. If such an opinion generally prevails in any country, that is sufficient to explain why farmers are inferior to other classes in intelligence. But the time is come when farmers must be convinced that they need education. Those who came early to this country knew but little of agriculture, or the modern improvements which science had brought about; and having got on very well with their rude systems, they think it unnecessary that their sons should know more than themselves. But when land has been some time cultivated, it will be impossible, unless farmers are educated, to farm profitably, or to follow out modern systems of agriculture. Under such circumstances the farmer, to be successful, must have a knowledge of principles. The farmer is like the physician; he must understand the nature of the disease, in order to prescribe the remedy. He must compound his own prescriptions—be both physician and apothecary; to do which properly will require education. Did time permit, he might use many illustrations to show how much is required in the successful prosecution of agriculture. For instance, a bushel of wheat required one pound of phosphoric acid; but this is only one of twelve substances that must be present in the soil to produce it. These dozen substances also exist in the animal, which could not live unless the food supplied to it contained these substances. When the animal dies, these dozen things go back to the soil; the soil gives them to the living plant; the plant gives them to the living animal, and the animal returns them again to the soil. Thus the great wheel of nature revolves, which shews you how much mind is required to understand and properly to regulate its motions. You may make a boy of ten years old understand these elementary principles, but it requires a matured mind to apply them. The great importance of agricultural institutions is, to give instruction in those branches of knowledge which enable the farmers, when difficulties present themselves, to farm skilfully, and to overcome him. A skilful system is that which makes a farm produce large crops at less cost than it would otherwise do.

It thus becomes apparent that in order to improve agriculture, and to raise the position of the farmer in the social scale, you must educate him. If you cannot go to school yourselves, it is your duty to provide suitable education for your children. This may be obtained in properly-organized schools. He did not sufficiently understand the condition of this province, to offer any opinion as to how this instruction may be given in the parish or primary schools. He had no doubt but a sufficient amount of instruction in the elementary principles of agriculture could be introduced through the agency of the common school. A small catechism like this [the Professor exhibited a copy of his own little catechism, which has been introduced with so much success into the schools in Ireland and Scotland], contains all the

principles that are necessary. A very little time is required to master them; one hour a day would be sufficient. Higher schools might after some time be established. Model farms would also be productive of great good. He had thus dwelt upon a few material facts, which he had ventured to recommend to their notice, hoping that some good might result from his observations. [The lecture was warmly received by frequent expressions of applause.]

It was moved by the Hon. Adam Fergusson, and seconded by E. W. Thomson, Esq., that the best thanks of this meeting be given to Professor Johnston for his highly interesting and instructive lecture.—Carried by acclamation.

We think it due to Professor Johnston to state, that his services were perfectly gratuitous, and that the best wishes of his Canadian fellow subjects will accompany him wherever he may go. And we earnestly hope that so valuable a life may long be spared to aid the great work of advancing the agriculture, not only of our own Empire, but of the whole civilized world.

THE DINNER,

We regret to say, was pecuniarily a loss to the society. Preparations were made on quite too large a scale. The fair being held so early in the season, many farmers had not yet got through their fall work. Thousands did not in consequence attend the fair at all, and of those who did, hundreds left for their homes during Wednesday and Thursday; which, together with the absence of the Governor General, very well account for the large expectations of the dinner committee being disappointed. We copy the following report of the toasts, speeches, &c., from our contemporary the *Examiner*, the assistant editor of which was on the spot. On comparing our notes with his, we find them so nearly alike that we spare ourselves the trouble of writing them out.

The dinner, on Thursday night, at Mr. McPherson's warehouse, a room of extraordinary dimensions, was a partial failure in point of numbers. Seven or eight hundred were expected, but about one-third of the tables were without occupants. The failure was probably owing in part to the price of the ticket being placed at a dollar; but in making the arrangements, the committee no doubt had an eye to the somewhat remote probability of the Governor General being present.

The President was supported on his right by E. W. Thomson, Esq., and on the left by Professor Johnston.

The following toasts were given from the chair:

"The Queen."

Song—"The Queen, God bless her," by Mr. Hill, Mayor of Kingston.

"The Queen Dowager, Prince Albert, and the Royal Family."

"The Governor General."

The announcement of this toast at first elicited a couple of faint "no, no's," which were instantly drowned in the tremendous burst of enthusiasm with which it was drunk.

"The Army and Navy."

Captain Dee, of the Rifles, on the part of the military, and Mr. Marks, on the part of the navy, returned thanks.

Mr. Wetenhall, M. P. P., regretted that some one better acquainted with Lower Canada had not been entrusted with the toast he had risen to propose. He had had little opportunity of seeing the agriculture of Lower Canada, as it had always been in the winter when he had visited that part of the province, and he

had found the ground either covered with snow, or knee deep in mud. We are in the habit of looking down on the farmers of Lower Canada as inferior to us. He could only say that, around Montreal, he had seen some farms remarkably well cultivated. There was one especially, farmed by an Englishman, Mr. Penner, better than any he had seen in Upper Canada. He (Mr. W.) was very well acquainted with the officers of the Lower Canada Agricultural Society, and he could testify that they had done all in their power to improve the agriculture of that part of the country. He spoke in terms of eulogy of the efforts of Major Campbell to improve farming in Lower Canada. It would give great satisfaction to the Agricultural Society of Lower Canada, when they hear that this is the first toast drank, after the usual toasts. There should be a good feeling between the farmers of Upper and Lower Canada. He begged to propose

"The Lower Canada Agricultural Society."

Mr. Penner replied. He observed that there is one branch in which almost every young farmer who is brought up in Lower Canada learns to excel, and that is ploughing. A straight furrow is much better in every respect than a crooked one. Improvement has taken place in Lower Canada, not only in the cultivation, but also in the stock. There was much truth in the old saying, that "much of the breeding goes in at the mouth." He paid a high compliment to Major Campbell, for the interest that gentleman has taken in improving the agriculture of Lower Canada.

Hon. Adam Ferguson bore testimony to the correctness of what had been stated by Mr. Wetenhall. Mr. Penner's farm is a garden. He had gone over it, examined the many attractions it presented, and concluded the walk with a glass of the best cider he ever drank in his life. If any man could go over Mr. Penner's farm, take a glass of his cider, and forget all about it, he must be an ungrateful dog. He would propose

"The Agricultural Association of Upper Canada."

Mr. E. W. Thomson replied. He was President of the Association the two first years of its existence. The first exhibition was got up under very adverse circumstances, and after a notice of only seven weeks. Next year the exhibition was held at Hamilton, and, notwithstanding the rainy weather, more than three times the number of things were exhibited. Last year, at Cobourg, there was a great improvement in the arrangements. This time the stock was good, if there had been a falling off in number. The ladies of Kingston had certainly produced as good articles as we have had exhibited on any previous occasion.

Mr. Wetenhall, M. P. P., feared that the toast he was about to propose was so similar to that he proposed before, that it would be difficult to add any thing to his previous remarks; but if we were to drink it in silence, it might be said we were ungrateful for kindness received. When he had been at the State fair of the New York Agricultural Society, the greatest attention had been paid to himself and his fellow Canadians. The Secretary had at once supplied them with badges and tickets; the Americans showed them every attention, and in fact sought out a Canadian wherever he was to be found for the purpose of making him the lion of the day. The President in his address said we were indebted to them for a thoroughfare, but we were indebted to them for a great deal more, for a market for our wheat, but confound them they charge us one-fifth of its value in duty. He would not give the President a rap, or attempt to combat his protectionist ideas, for if he did he should infringe one of the fundamental rules of the Society—that not a word on politics should be breathed. The next exhibition would probably be West, near the Falls, where the Americans would have a good opportunity to come over, and he hoped they would come not as

to-day by twos and threes, but by hundreds and thousands (cheers). He begged to propose,

"The Agricultural Society of the State of New York."

Hon. Adam Fergusson said, if there were no Americans there to reply, he would play the Yankee for once. Mr. F. then replied to the toast.

Mr. Marks proposed

"The Press."

He spoke of the press as exercising an immense influence over opinion, and he desired to see it conducted by able men, free from scurrility and abuse, and giving a proper direction to public opinion.

Dr. Barker, as the oldest member of the press present, replied. It was not fair to complain of the scurrility of the press. The people are to blame in the matter; they can at any time check the scurrility of the press; but in all new countries there is a love of personality, and so long as any considerable number of persons can be found who are fond of personality and abuse, the press will never be wholly free from these faults. He begged to return thanks on behalf of his professional friends.

Mr. E. W. Thomson gave

"The Mayor and the Corporation of Kingston."

The Mayor returned thanks. He begged to propose,

"The President."

The President returned thanks, and gave

"The Executive Committee of the Association."

Mr. Marks replied. He thought the Legislative grant to the Association ought to be increased to £500 a year, and the District where the exhibition was held might raise £500 more. The amount of the Legislative grant, £250, had not been received. If the Committee did not receive it in time to pay the premiums, they would borrow the money, for it would not do to give a due bill to any man who had earned money here faithfully by competing.

The Chairman gave,

"The Health of Professor Johnston."

Professor Johnston returned thanks. No person, he remarked, who knows much about the agriculture of Europe would have expected such an exhibition in Canada as we have witnessed these two days. It would be quite unfair to compare your shows with those in England, Scotland or Ireland; yet I have seen in some respects a much inferior exhibition of the Highland Agricultural Association. That is a true statement, and I am entitled to draw the conclusion that, in an agricultural point of view, Canada is progressing. I hear complaints, and well-founded complaints. But can you expect to control the elements, or the minute fungus that comes we know not whence, and goes we know not where? It is to be hoped that these causes of complaint are passing away, and that in two or three years, the insect and the fungus will be seen no more. The agriculture of any country depends on the rising generation. Within a few years agriculture has taken a step in advance; and this imposes a duty on the young of acquiring what their fathers did not. I was told that the natives of New Brunswick were not so industrious as their fathers were. I do not allude to the Europeans, but to the "blue noses." I know not how it is with you in Canada; but there is a restlessness in the young men of America, which ought to be guarded against. The speaker then recounted some of the advantages that would result from the establishment of an agricultural institution, the necessity and utility of encouraging such works as the *Canadian Agriculturist*; model farms might be established, and a knowledge of the elements of agriculture might be diffused through the medium of the primary schools. You have several colleges in the country, and some of them might have professors of agriculture, who could also superintend the model farms. I mention these as matters which you would do well to

consider, and if you do consider them, I feel convinced you will come to a right conclusion.

Mr. E. W. Thompson proposed the health of the judges, many of whom were ladies, and had most arduous duties to perform.

Mr. G. A. Barber of Toronto, returned thanks.

From the Chair—

"The Highland Agricultural Society of Scotland, the Royal Agricultural Society of England, and the Royal Society of Ireland."

Hon. Adam Ferguson returned thanks. He had sat for four or five years at the Board of the Highland Society of Scotland. About fifty years ago, some half dozen persons were dining together and taking claret, all of them proprietors, and one of them his father, began to think if they could not do something more for agriculture than drink success to the Highlanders. That was the origin of a society that now counts its thousands of members and distributes its thousands. The farmers ought to be well educated; they should know something of the laws of the country, should be acquainted with chemical science and botany; know all the points of cattle and their organic structure. He had a toast to propose, and he did not know how they came to put it into the hands of an old grey-headed fellow like him; but he was always willing to do his duty towards the ladies. Hoping they would get their heart's desire in getting good husbands, he begged to propose,

"The Ladies."

Mr. Mackenzie, of Kingston, a year-worn bachelor, replied in a jocular speech, altogether very funny, and a little lengthy. He gave

"The Ploughmen of Whitby."

Mr. Peter Perry replied. He explained the advantages of good ploughing. The farmers he considered the first class of the community, the mechanics next, and the merchants third. The farmers must become their own legislators, and no longer entrust their most important interests to a lot of pettifogging lawyers. He dwelt at considerable length upon the commercial position of the Province. We ought to ask England to endeavour to obtain for us reciprocal free trade with the United States; and, in the event of the Americans refusing, to impose upon their produce admitted into England, the same rate of duty which they imposed upon Canadian, when imported into the United States. If England refused to act upon our petition, we ought then to take the matter into our own hands, abolish our customs, admit English goods free of duty by the St. Lawrence, and he would defy the devil to prevent the States bordering on Canada, from being filled with smuggled goods. (Laughter and cheers.) He concluded by giving,

"The Ploughmen of Canada."

The assembly then broke up. The whole proceedings of the dinner passed off with enthusiasm and the best possible feeling.

WELLAND CANAL.

We insert below the amount of Tolls received, from this important Canal, during each of the first four months after the opening of navigation, for the years 1848-49. The increase of the present year amounting to 53 per cent. over the last, is a result full of promise and encouragement. Our public works are now bidding fair for yielding a large revenue to the country; and the amount must be annually increasing as the resources of the great west become opened up. We hope the liberal prize offered by His Excellency the Governor-General will induce several competent hands to enter into honourable competition, that the connection between our improved water communica-

tions and the great interests of trade and agriculture, may be fully and truthfully set forth.

1849.			1848.		
April	£2010 14	$\frac{1}{2}$	April	£1745 17	9
May	5916 4	$\frac{1}{2}$	May	4650 4	$1\frac{1}{2}$
June	5570 7	9	June	2761 4	6
July	4496 14	$2\frac{1}{2}$	July	2566 11	$9\frac{3}{4}$
£17,994 0 0 $\frac{1}{2}$			£11,723 18 2		
11,723 18 2					
Increase in 1849. £6,270 1 10 $\frac{1}{2}$					

(CIRCULAR.)

To the Editors of the *Agriculturist*.

Cobourg, Sept. 22, 1849.

GENTLEMEN,—I beg leave through you and all the public newspapers of the Province, to apologise to the Delegates of the New York State Agricultural Society, who honoured us with their presence during part of our exhibition, for having neglected to read their gratifying letter at the dinner. The bustle and confusion, at the moment this letter was handed me, entirely prevented my recollection from calling it up at the proper time.

I trust, however, that all the papers who may notice our proceedings, will be good enough to copy the enclosed, as also this apology; by which means, I trust, some reparation to the New York State Agricultural Society who honoured us with this delegation, as well as the distinguished gentlemen who composed it, will be made.

I am, sir,

Your obd't servant.

H. RUTTAN,

President Ag. As. U. C.

(COPY.)

Kingston, Sept. 20, 1849.

H. RUTTAN, Esq.,

President Provincial Agricultural Association.

DEAR SIR,—It is with great regret that we are obliged, by imperative engagements, to leave this city without partaking of your hospitalities at the Agricultural Dinner, to which we have been favoured with your invitation.

Permit us to express to yourself and to the officers of your Association, our most heart felt thanks for the attentions which have been shewn us, and the facilities we have enjoyed of examining your Exhibition, so creditable to your Association and to the Province. We trust that the interchange of delegates between your Association and our Society will be continued, and prove, as we trust it has heretofore, most salutary.

We ask you, Sir, to offer on our behalf to your Association at your dinner, the following sentiments:—"The Provincial Agricultural Association of the Province of Canada; its exhibition has been most gratifying to the Delegates from the New York State Agricultural Society, and they desire, and trust, that its future history will be one of continued increase, and result in great good to the agricultural interests of Canada."

We have the honour to be,

Most respectfully, your obd't servants,

B. P. JOHNSON,

Cor'g Sec'y N. Y. State Ag'l Society.

J. M. SHERWOOD,

Ex-President.

HENRY WAGER,

Member of Ex-Committee.

Delegates.

It is calculated that the prime cost of the materials used in England and Wales to produce artificial light, viz., coal, oil, tallow, camphine, &c., cannot be less than £11,336,000 per annum.

NEW YORK STATE AGRICULTURAL EXHIBITION.

This important affair came off during the second week of September, at Syracuse; and from all we can learn, it has been eminently successful. In point of numbers, both as regards stock, implements and visitors, it far outstripped any of its predecessors, which is saying a good deal, as such of our readers know who attended last year's show at Buffalo. The weather was delightfully fine; and the show grounds were conveniently situated on high ground, about a mile from the city, commanding on all sides extensive and picturesque views. It would be difficult to find a prettier spot for such a purpose. The countless numbers of well dressed, and, what is better, well behaved people, both on foot and in carriages, pouring in and out the extensive show grounds in one unbroken file, with enjoyment and good will depicted on their countenances, presented a grand and imposing spectacle. We have neither space nor time at present to go into any particulars, and as yet have seen no authenticated reports of the show, which will doubtless appear in the American Agricultural papers. We can only say, in general terms, that such an immense display of live stock and farm produce, with an endless variety of mechanical, horticultural, manufacturing and artistic productions; a large portion of which, being of a high order of merit, are most honourable to the empire state, indicating, in a manner not to be mistaken, the intelligence, enterprise, and rapid progress of its people. Only think that some forty years ago the whole country surrounding this flourishing city was an unbroken wilderness! We must not omit to mention that Professor Johnston's address was received with loud applause by listening thousands; it was a production worthy the high standing of its author, and we hope to transfer it to our pages the earliest opportunity.

AGRICULTURAL DISCUSSIONS.

These form an important feature in the proceedings at the annual fairs of the State of New York, which we should like to see adopted at our own. We have now had four annual meetings of the Provincial Association; and though many of the best and most intelligent farmers in Canada have been assembled on these occasions, no public discussions have taken place upon any of the important subjects that invite the attention of the Canadian farmer. The amendment of the present defective statute relating to agricultural societies, and the government grant; the means that should be adopted for collecting information and statistics upon the agriculture of Canada, and the publication of reports and transactions; the establishment of model farms, and the introduction of agricultural studies into the common schools; the establishment of a chair of agriculture in the University—these and similar matters, besides the thousand and one moot points that arise in practical farming, should engage the attention of the enterprising and intelligent farmers that assemble from all parts of the country at these annual gatherings. Information would be elicited, false notions dispelled, enterprise stimulated, united action secured,

and well-considered plans determined upon and set in motion—all these and many other beneficial results would be speedily brought about by meetings and discussions, properly managed, on these occasions. We hope that the Directors of the Association will see to it, that proper arrangements are made for holding such discussions at the next fair, in the Niagara District: suitable subjects should be selected, and some person assigned to introduce them beforehand.

The following report of a discussion at Syracuse, is a sample of those which are held at the New York State fairs. We copy from a Syracuse paper. The report is of course greatly condensed, but the outline will give a tolerable idea of the debate. The subject, we need not say, is a very important one, and, as our readers are aware, has been brought under public notice here by the editors of this journal on former occasions.

MEETING ON THE SUBJECT OF THE AGRICULTURAL SCHOOL.

A conversational meeting, for the discussion of the above subject, was held at the 1st Presbyterian church, last evening.

Mr. Delafield, of Seneca county, on taking the chair, after having stated the object of the meeting, proceeded to remark that if he was not mistaken, about seven-eighths of the population of this state were agriculturists, and hence the necessity of such an institution as the one proposed. The subject had already attracted the attention of the legislators of this state, and a movement had been made in reference to this important matter. He had often asked himself the question, how it was that the practical farmers had paid so little regard to this subject? It struck him that they, of all others, needed education—an elementary education in the various branches of knowledge. The farmer needed a knowledge of law to enable him to act in a judicial capacity; a knowledge of medicines, in order to encounter the diseases to which he is subjected while far away from the places where medical skill can be obtained. In short, he needed a general knowledge of the various branches of science. He hoped if there were lawyers in the house, they would not be offended when he said that the farmers could settle their disputes without their aid, and there was no actual necessity for their services. Farmers were too content to let their children receive only the common rudiments of education; they needed something more; they needed a direct knowledge of the matters with which they had to deal. Our schools and colleges instruct their sons in the more abstruse departments of education, but unfortunately led away their minds from the cultivation of the earth, and hence were of little use to the farmer's son. The farmer's son needed such an education as would enable him to cultivate the earth intelligently—to know what he does and why he does it—to know from facts derived from research, that what he does is right, and not because his father or his neighbors do so before him.

Hon. Samuel Chever, of Saratoga, apologized for not coming prepared to speak, by saying that his friends had taken the liberty of posting him up as one who was to open the discussion in the absence of Mr. Blunt, of N. Y. and this was the first notice he had of the part he was expected to take. He proceeded to remark that education upon any subject presupposed the want of it. He found that this subject of an Agricultural School met with more opposition from farmers than from any other class. Professional and educated men readily yielded assent to it. But, says the farmer "what do we want to know about your chemistry and your geology, in order to raise our corn and potatoes? We know it all

now." The fact was, the farmer needed education in his profession just as much as the lawyer and the physician, who were obliged to spend years of time to qualify them for success in their pursuits. The farmer had a mistaken notion that his was a subordinate pursuit. Was it so? What progress would the merchant, the manufacturer, and the mechanic make, with as little knowledge of their respective occupations, as the farmer has ordinarily of his? Such a question might startle those who can raise such good crops; but might not the fact of their raising fine crops be perchance because they had hit upon the course which science indicated? What did they know of the nature of the soils they cultivated? What could they tell of the composition of clay, sand or muck? Science told us that a fertile soil possessed certain elements, and that the observance of one or more of them produced sterility. The farmer in order to remedy the defect in his soil, tries one after another of the catalogue of ingredients, and perhaps at length gives up his farm, and goes to the west. Another takes the same soil, and by ascertaining what is wanted in it, brings it back to fertility. This was the result of science, which the former occupant did not possess.

It was important to know what elements were contained in the manures applied to the soil. Farmers ought not to expect "to gather grapes of thorns, or figs of thistles."

The subject of draining was another on which the farmer should be enlightened. Draining, to be sure, was not of so much importance in this country as in England and Scotland, and many parts of Germany. With them scarcely a farm but contained some marshy spot where it was needed.

In regard to fencing, the material for the purpose was becoming exhausted, and it was becoming necessary to resort to economy, and to other modes, such as ditching and hedging.

Then in relation to farm stock, who could point out the defects in animals, tell what signs indicated power, endurance, or sprightliness? How often were farmers made a prey to the acts of the horse-dealer? who made them believe that there was something defective in an animal which he was anxious to purchase. How little did they know of the diseases of the horse, and of the remedies to be administered.

In regard to the soil, chemistry was beginning to teach what materials they had to deal with, and how they were to mix them up. What would we think of a man who should go into a laboratory and mix up promiscuously the various chemical ingredients, in order to see produced certain results? So in regard to farming, it was necessary to go to work intelligently.

Geology was pointing out the spots where they could expect a good soil; mineralogy was lending its aid. The results of the naturalist were becoming of immense value in ascertaining the habits of the insects that infested vegetation, with a view to arrest their ravages. Farmers needed to know that theirs was not a subordinate calling of the second or third rank. This idea was inherited from their ancestors across the water, where the men who cultivated the soil were hirelings and subordinate to the land owners. The farmer's occupation was first of all others, and it was impossible for it to become by education anything else than the highest and most noble of all.

It may be said that it would cost a great deal of money, some \$50,000, to build and endow an institution such as was desired. Was there any reason why farmers, as well as all other classes, should not ask for a pecuniary bounty from the State? The revenues were principally derived from the canal tolls, three-fourths of which came from the transportation of the agricultural products of the farmer, and the merchandise received by him in return. The amount of canal tolls was about \$3,000,000 annually

All they asked was, to set apart one month's tolls to found this school. Was that too much? Could legislators refuse this sum to the farmers who were not in the habit of asking much for themselves?

Prof. Johnston, of England, was invited to take part in the discussion, but excused himself on account of fatigue.

Prof. Norton, of Yale College, being called upon, said, that for two or three years, he had been engaged in giving instruction in scientific agriculture, and he had found the great obstacle in the way of improvement in farming, from the fact that the farmers thought they knew as much as was necessary. In the State of Connecticut, three-fourths of the legislators were farmers; yet it was with the greatest difficulty that a small appropriation could be procured for the diffusion of this branch of knowledge. The fallacy of the argument that farmers knew enough, was shown by the deterioration of farms in many parts of the country. As to any plans, he was not prepared, nor did he think it proper for him to recommend any particular one, only he was strongly in favor of the general subject of education among farmers.

Mr. Buckland, of Canada, being invited to give his views, said, he concurred in most of the views which had been presented in relation to the connection of science with agriculture; but thought that the tendency of the high scientific attainments recommended were scarcely compatible with ordinary habits of farm business. What was wanted in his opinion, was a sufficient encouragement to really scientific men to induce them to give their time and services to the subject. An education in the science of agriculture might be given in the common schools and higher institutions of learning, sufficient for all practical purposes, provided such instruction be practically illustrated by the operations of the farm.

The Chairman submitted a few remarks, stating what progress had been made in the district where he resided, mainly through the influence of a small society that was formed some years ago. One man, who at first derided the idea of science being applied to agriculture, at last came to one of the members for information on a particular subject, and generously tendered the individual \$3.

Mr. Allen, of Buffalo, followed with some remarks, which we have not space to give, and offered the following resolution:

Resolved,—That this meeting recommend to the next Legislature to pass a law making an appropriation for an Agricultural School.

Mr. Evans, of Madison County, desired to say a word or two, for the purpose of showing that a knowledge of agricultural science did not tend to create a distaste for manual labor in farming, but on the contrary, he had found upon introducing this branch of study into the institution with which he was connected, that the pupils became more and more anxious, as they pursued their studies, to follow the occupation of farming.

The meeting was further addressed by Messrs Chever, Buckland and others, and then adjourned to meet on the following evening at the same place, when Professor Mapes of New York, would be present, and submit some remarks upon the subject.

MANAGEMENT OF THE PROVINCIAL ASSOCIATION.

To the Editors of the Agriculturist.

Nelson, October 6, 1849.

GENTLEMEN,—I take the earliest opportunity, since my appointment as president of the Agricultural Association of Upper Canada, of addressing you on the system of management adopted by that association.

The working of this system has now had a fair

trial on four different occasions, and I believe no individual will be found bold enough to assert that on any one of these occasions it has worked well, or that we can reasonably hope for the introduction of an *uniform* system of management, until our present system has been entirely changed.

Hitherto the local committees have exercised power which, so far as I know, was never delegated to them by the Board of Directors; and as each local committee is of necessity composed of inexperienced men (so far as transacting the business of the society is concerned), it is no wonder that at every succeeding exhibition we have had the blunders of the preceding ones repeated; and so long as the local committees are allowed to assume the legitimate functions of the Board of Directors, instead of giving their valuable assistance in managing those parts alone of the business which are of a purely local nature, just so long will we have a repetition of blunders, which have already nearly destroyed the Association.

I was glad to see that Mr. Marks had proposed a resolution for the purpose of affecting some change in our management. I should be glad to have a copy of it; as, in case it should not contemplate as great a change as is necessary, I would take the opportunity of corresponding with Mr. Marks.

I am preparing a letter on the subject, for your valuable paper, and will have it ready for the November number.

I remain, gentlemen, yours, truly,

JOHN WETENHALL.

SUGGESTIONS FOR ANALYZING, &c.

Chatham, Western District,

August 14, 1849.

To the Editors of the Canadian Agriculturist:

GENTLEMEN,—As I believe you feel an interest in the well-being and welfare of mankind generally, I would beg to submit to your consideration the propriety of making analyses of the following articles, and publish the results in the *Canadian Agriculturist*, for the information of all whom it may concern, viz.:—To ascertain the potatoe disease, analyze equal given quantities of sound, and also partially decomposed or rotten potatoes; set the constituents down, in both cases, and see the difference; this will show what is absent in the rotten potato to make it sound, and also the constituent to prevent the rot when applied. Rust on wheat, sound and unsound straw; smut, sound and unsound grain; different kinds of weeds, mustard, red-root, melons, &c., giving their vulgar name as well as botanical, that farmers may know them at a glance—the latter particularly, with a view of supplying minerals in certain proportions to the soil, so as to promote the growth of large, plump grain, &c., and be too strong for weeds, or a great part of them, thus lessening the labour of hoeing and weeding, &c. You have observed that in land containing considerable marl, and being well drained, weeds are not near so numerous as they are where there is a predominance of vegetable mould and moisture. Also, as a matter of still greater importance, analyze human blood,

say at 5 years old, 10, 15, 20 and 25, then 50 or 60, setting down the age and proportions of principles found, opposite the age in each case—that is, of persons in good sound health, and first-rate joyous spirits, at the different ages mentioned; then again at the same periods—5, 10, 15, 20, 25, 50 and 60—the blood of weakly individuals, say labouring under fever, ague, rheumatism, cholera, and other fearful and distressing complaints; set them also down opposite their respective ages—*this must be quite true and correct*—and then, by comparing the proportions of principles found in the blood of sick and healthy persons, you will see what is wanted in the debilitated, unsound or weak blood, to make it good and sound; for just according to the state of the blood, so will the health be: if pure, the health will be good, vigorous and wholesome also. Let the terms used in the explanation of the principles be as plain as possible, so as to be easily understood; and also the grain, vegetables, meat, milk, fruit, &c., containing the greatest amount of good and wholesome principles, and the state in which it ought to be used—as, should flour be bolted very fine, or should not the greater part or whole of the shorts be mixed with the flour, to make the most wholesome or best blood. The blood of different animals deserves enquiry: indeed all grains, flesh, vegetables, fruits—every thing that is used by man and his domestic animals, horses, cattle, sheep, &c.—should be analyzed, to see which is the best adapted to the blood of each; of course the best blood of each must be analyzed also, so that the constituents in the blood of each animal may receive suitable nourishment—for instance, the blood that contains much carbon, will require grain that contains this carbon in the greatest abundance, and the animal will thrive and flourish, or grow better and smarter, the more he gets of it—not too much, however. It would be a treasure for the farmer to know and avail himself of all this!!! and the position which you hold at present points you out as the good-instrument. Even your own interest depends on the truth and intelligence of your periodical; for a work of this nature, being cheap and new, and enjoying also as yours does a very wide circulation, will be more eagerly sought after and read with more avidity than books. Do not be afraid of giving the people too much knowledge, for it tends to their virtue and prosperity; knowledge and virtue, joined hand in hand, will make the people happy, or in other words, love each other. I hope you will be able to have it out in the September number, or at least the most important part of it. I have written to the editor of the *Genesee Farmer* also, to publish an analysis in his paper as above. Which will be the most correct? I enclose you a dollar, for which you will please send me a copy of your journal from the commencement of the year, and oblige

Your humble and obedient servant,
MALCOLM WEIR.

[We insert our correspondent's inquiries, and shall be glad to receive any replies from our scientific readers. In case we do not, we will consult the best authorities, and give our correspon-

dent the results of trust-worthy analyses. As to our going into original investigations of some of the most difficult branches of physiology and organic chemistry, we profess ourselves utterly incompetent. Such matters involve considerations belonging to the highest departments of experimental science; even the analysis of a soil (qualitative and quantitative) requires much readiness at manipulation, considerable time, and more patience than many people seem to imagine. The analysis of vegetable and animal products is far more delicate and difficult. We have known from five to ten guineas given to competent chemists in England for a single analysis of inorganic substances. Unless experiments are conducted upon correct principles, and the greatest care used at every stage of the process, the result can only mislead.]

DURHAM CATTLE.

To the Editors of the *Agriculturist*.

Woodhill, Canada West, Sep., 1849.

GENTLEMEN,—I take the liberty of soliciting a corner of your journal, to correct (what I conceive to be) an erroneous impression lately made by the publication of an article relating to Improved Short Horn Stock. It appears that Mr. Sherwood of Auburn, N. Y., has lately added to his well known valuable herd, a bull, imported from Mr. Bates of Kirk-leavington, county of York, England. I entirely agree with Mr. Stevens, who purchased this bull for Mr. Sherwood, that, taking into due consideration *all the qualities* which render cattle profitable, there is probably no herd in England which will bear a fair comparison with that of Mr. Bates. This I most readily concede, but I consider the estimate made of Mr. Sherwood's bull as being rather "*broad-cast*" sowing, when it is asserted, that "breeders will nowhere else in North America find Mr. Bates's blood in like perfection. If Mr. Stevens means only to express his personal opinion upon Mr. Sherwood's bull, as a means of obtaining the *Duchess blood* through an animal which he considers to be the finest of that tribe in North America, then his opinion will go for its own value, and no more.—If he means to go further than that, I, for one, demur. I knew Mr. Bates for more than 35 years; I have been acquainted with his stock since 1812. We were ever on terms of the most intimate friendship and correspondence, and I take upon me to assert, without hesitation, that the *great and precious feature of his stock*, what he always considered his special boast and treasure, was, his possession of *the old, pure, Duchess blood*. To obtain this, he neither spared money nor pains, and I well remember the pride with which he exhibited to me, at Halton Castle, Northumberland, where he then farmed, "*Young Duchess*," a heifer of a year old, for which he had paid Mr. Colling *one hundred and eighty guineas*.

Now, sir, there is no doubt whatever that this highly prized "*Duchess blood*," has been for

years in the possession of Mr. Vail of Troy, and many valuable animals have been imported by that gentleman *direct from Mr. Bates*. Mr. Vail knew Mr. Bates well, and I am confident he will readily confirm my assertion, that it was upon the *Duchess* blood Mr. Bates always piqued himself, and that the introduction of *Belvidere* (a very noble bull) by Mr. Bates into his herd, was more to escape the evils of *in and in*, too long continued, than for any new qualities which he expected that bull to impart. Old *Ketton*, by *Favourite* (see B. Herd Book), was the animal which gave value to Mr. Bates's herd, along with the *Duchess* blood; and that same tribe of improved short horns may now be had, in the greatest purity and perfection, from Mr. Vail. I hope, sir, that no one will misunderstand me, or suppose that I desire for a moment to depreciate Mr. Sherwood's importation. Mr. Sherwood has been long distinguished for his zeal, skill and success as a breeder of short horns, and (I may add) not more so, than for all the qualities which characterize an honourable and an excellent man. I know that he has long been satisfied of the superior qualities of Mr. Bates's blood, and has introduced it into his own herd. I have myself a heifer purchased from him, got by *Symmetry*, of Mr. Bates's blood, for which I would not accept any ordinary price; and I am well convinced, that the bull which Mr. Bates has now sent to him, will prove an animal of the highest value. All this may be quite true, and yet it may be unfair, and may mislead the public to assert, that from Mr. Sherwood, and from him alone, the *Duchess* blood can be procured.

I am aware that these remarks will, by some *candid friends*, be ascribed to a source not altogether disinterested, and it will be announced, as a sufficient reason for laying them aside, that the writer is known to have partly derived the blood of his own herd from Mr. Vail. Let this go for what it is worth, and I shall content myself with expressing a hope that every man striving to improve his stock, may have the like satisfaction, as my friend, Mr. Wetenhall, and I both enjoy, in the bull which we have been so fortunate as to procure from Mr. Vail, got by *Meteor* out of *Lady Barrington*.

I have the honour to remain,
Gentlemen,
Yours very truly,
ADAM FERGUSON.

INSECTS DESTRUCTIVE TO HOPS.

To the Editors of the Agriculturist.

GENTLEMEN,—The valuable hints I have received from your paper, and the zeal you have evinced in the cause of agriculture, induce me to address you upon a subject of the utmost importance to the "hop growers" of this part of Canada, for I feel assured it will meet at your hands with that attention which the graveness of the case requires.

A few years since, an animal, called here "the measuring caterpillar" (from its striding mode of progress) made its appearance in the early part of July, upon the hops. By close observation, I have been able to trace this destructive little ani-

mal to the egg, which is deposited upon the under part of the leaf by the miller moth, in the latter part of June: at a quarter of an inch long it commences its destructive peregrinations, and in the course of a few days arrives at its full length of one inch,—of a pea green colour, with the power common to the tribe, of forming a web. For the first year or two it did not affect the crop much, but their numbers have lately increased to such a degree, that a hop grower, with whom I was speaking on the subject, told me he would not have 12 cwt. off five acres; and I have heard of one grower whose crop is totally destroyed.

Burning sulphur to windward of the hop-yard, and casting lime amongst the vines when wet, have been tried, but without effect.

Shaking them off, by jarring the poles, and killing them upon the ground, is the only plan now adopted in order to save what is left of the crop,—400 have dropt at a shaking from one pole.

Even this expensive and tedious proceeding is not attended with success, three generations having appeared in one season. If means are not discovered of destroying this insect, hop culture must be given up in this part of the country.

Hoping you will excuse the liberty a stranger takes in trespassing on your time by requesting an answer to this,

I have the honour to remain,
Gentlemen, your obd't servant,
WM. MAGRATH.
Crédit P. O., C. W.

[We shall be obliged if such of our hop growers as have had practical experience in the matter contained in our correspondent's letter, would favour us with the result of their observations.—The caterpillar referred to we have seen on the hop plant in England, but never heard of its doing any serious injury—perhaps from the fact of its being unfrequent. The *aphis*, or "fly," is the great pest, and it is often destructive to the plantations in England. We will keep this subject in mind.]

MARKS OF A GOOD WORKING OX.—Mr. Asa G. Sheldon, of Wilmington, who has great experience in cattle, particularly in working oxen, and is regarded as the best authority, gives the following:—

Long head, broad and oval between the eyes; the eye full, keen and pleasant. Such marks denote ability to receive instruction and a readiness to obey. The short-faced ox starts quick at the whip, and soon forgets it. The black-eyed ox is inclined to run away. An ox with very large horns near the head is apt to be lazy, and he cannot endure heat well.

Forward legs straight; toes straight forward; hoof broad, not picked; the distance short between the ankle and knee. These properties enable an ox to travel on pavement and hard ground. If the ox toes out, the strain comes on the inside claw, and when travelling on a hard road, he will be lame at the joint between the hoof and the hair. When the toes turn out the knees bend in. An ox with crooked knees is apt to become lame by holding heavy loads down hill.

Breast full; straight on the back; round ribs, projecting out as wide as the hip bones. These are indications of strength and a good constitution.

Horticulture.

SELECTION OF GOOD FRUITS.

We extract the following interesting remarks on fruit culture and selection of varieties, by that experienced New-England cultivator, Samuel Walker, Esq., of Roxbury, now President of the Massachusetts Horticultural Society, from the Report of the American Institute.—*Horticulturist*.

In submitting the following list of the best American varieties of apples, pears and plums, in juxtaposition with the best European varieties, it is not my intention to make any invidious comparison; on trial—the truth, the whole truth, will be amply sufficient for any purpose. I shall therefore leave the result to the hands of the best judges—the cultivators—simply stating that I shall select the best varieties from the catalogues of the New and the Old World.

APPLES.	
<i>American Varieties.</i>	<i>European Varieties.</i>
1. Early Harvest,	1. Early Red Margaret,
2. Benoni's Apple,	2. Red Astrachan,
3. Benoni,	3. Sops of Wine,
4. Porter,	4. Gravenstein,
5. Pomme de Neige,	5. Ross Nonpareil,
6. Baldwin,	6. Dutch Mignonne,
7. Yellow Belle Fleur,	7. Ribston Pippin,
8. Newtown Pippin (green),	8. Cornish Gillyflower,
9. Rhode Island Greening,	9. Herefordshire Pearmain,
10. American Golden Russet.	10. English Golden Russet.

I will not carry out the comparisons further, but submit a list of American varieties, all of which are deserving of extensive cultivation, viz. :—

Large Yellow Bough, Chandler, Fall Harvey, Jonathan, Minister, Hubbardston, Nonsuch, Rambo, River, St. Lawrence (Corse's), Northern Spy, Esopus Spitzenburgh, Summer Queen, and Ladies' Sweeting.

PEARS.	
<i>American Varieties.</i>	<i>European Varieties.</i>
1. Bloodgood,	1. Citron des Carmes,
2. Dearborn's Seedling,	2. Passans du Portugal,
3. Pratt,	3. Williams' Bonchretien,
4. Knight's Seedling,	4. Flemish Beauty,
5. Tyson,	5. Rostiezer,
6. Seckel,	6. Fondante d'Automne,
7. Cushing,	7. Bezi de la Motte,
8. Heathcot,	8. Doyenne Blanc,
9. Andrews,	9. Louise Bonne de Jersey,
10. Buffum,	10. Doyenne Gris,
11. Dix,	11. Beurre Diel,
12. Lawrence,	12. Duchesse d'Angouleme,
13. Columbia,	13. Glout Morceau.

In addition to the above, I will add a list of European varieties of great merit, viz. :—

Beurre d'Aremberg, Beurre d'Anjou, Beurre Bose, Eyewood, Henry IV., Van Mons Leon Le Clere, Marie Louise, Winter Nelis, Paradise d'Automne, Passe Colmar, St. Chislain, Vicar of Winkfield, Urbaniste, and Echasserie. For baking—Belmont, Black Worcester, Catillac, and Uvedale's St. Germain.

PLUMS.	
<i>American Varieties.</i>	<i>European Varieties.</i>
1. Jefferson,	1. Green Gage,
2. Columbia,	2. Purple Gage,
3. Washington.	3. Coe's Golden Drop.

To this lot of plums, I will add the following American varieties, as worthy of a place in every good collection, viz. :—

Purple Favorite, Huling's Superb, Imperial Gage, Lawrence Favorite, Bleecker's Gage, and Bingham.

CHERRIES.—The best varieties of American and European cherries are very dissimilar. I shall therefore submit a list of such varieties as I consider of the best quality, viz. :—

American varieties.—Sparhawk's Honey, Downer's Late, Sweet Montmorency, Manning's Mottled, Downing's Red Cheek.

European varieties.—Black Eagle, Black Heart, Black Tartarian, Downton, Knight's Early Black, Bigarreau,

Bigarreau Holland, Elton, Florence, Belle de Choisy, May Duke, and the Late Duke.

By the foregoing statement, it will be perceived that among the well established apples and plums in this country, a majority are the products of America. Of pears and cherries, the greater number have been imported from Europe.

I will now proceed to the second part of my subject, and notwithstanding my esteemed friend, Thomas Bridgman, Esq., has with ability and good judgment, brought the subject of seedlings under the notice of the managers, yet I shall not refrain to state all I intended to do before I received Mr. Bridgman's able report.

I am aware when a word of caution is to be spoken, or an error pointed out, that it should be done with candor and kindness; in that spirit the following remarks are submitted :

SEEDLING FRUITS.—My object is to point out an error, may I not rather say, a weakness, on the part of some cultivators of fruits, to overrate their own productions, more especially so when they raise a seedling apple, pear, plum, peach or cherry, having any pretension to merit. If their production is of the best quality, and possesses but a single point of superiority, say only a shade of color, or a slight increase of size, in addition to the good qualities of the most choice variety of that class of fruit in the present catalogues, that alone will commend it to other persons, and they will mete out its praise in due season.

No seedling should be recommended for extensive cultivation until it shall have been proved to be *superior in some respects* to the variety it most resembles. For instance, if any person should raise a seedling plum one-fourth larger, and equal or superior in flavor, more beautiful in its appearance, and more productive than the Green Gage, then the new variety would soon find its way into every good collection of plums. The same remarks will apply to the Newtown Pippin apple. The person who shall be so fortunate as to raise a seedling apple of equal flavor, better color, and a tree more thrifty and productive than the Green Newtown Pippin, will have accomplished something *worthy of record and a name*. But cultivators, like young fond mothers, are apt to consider their production to be a "non-such;" time, alas! often convinces them of their mistake; and when too late, they find they have only deceived themselves.—*Albany Cultivator*.

PLANTING STRAWBERRIES.—As a general rule, the spring of the year has been found much the best season for planting out beds of the strawberry. But it often becomes necessary to perform the operation during summer, or early in autumn. If, at this season, the weather should prove quite dry, a regular and abundant watering for several days does not always prevent the loss of a considerable portion of the plants. To obviate this difficulty, the writer has adopted the following very simple treatment, which has been quite successful even at midsummer, and in the midst of the recent extraordinary drouth. Nearly all the leaves are pinched off from the plants, except the central and half developed ones; the roots are dipped in a vessel of soft mud, giving them a thick coating; when set out, the earth is well settled about them by means of a copious watering; and then about two inches of rotted manure spread upon the surface. This will keep the soil sufficiently moist with one daily watering, if the weather be very dry, and much less frequently if it be moist.

DIFFUSION OF SEEDS.—In boring for water at a spot near Kingston-on-Thames, some earth was brought up from a depth of three hundred and sixty feet. This was carefully covered with a hand-glass, to prevent the possibility of the seeds being deposited on it, yet in a short time plants vegetated from it.

SIGNS OF THE VIGOR, MATURITY, AND DECAY IN TREES.

Signs announcing the Vigor of a Tree.—The branches, especially towards the top, are vigorous; the annual shoots strong and long; the leaves green, vigorous, and thick, principally at the summit, and falling late in autumn; the bark is clear, fine, united, and nearly of the same color from the foot to the large branches. If at the bottom of the veins, or divisions of the thick bark, there appear smaller divisions, which follow from below upwards, in the direction of the fibres, and live bark be observed at the bottom of these divisions, it is an indication that the tree is very vigorous, and rapidly increasing in size. If some of the lower branches, stifled by others, are yellow, languishing, and even dead, this is an accidental effect, and is no proof of the languor of the tree. Finally, it is a sign of vigor when branches are seen at the summit of the tree, rising above the others, and being much longer; but it is to be observed, that all trees with round heads do not throw out branches with equal force.

Signs which indicate that the tree is mature.—Generally the head of the tree is rounded; the shoots diminish in length each year, and the farthest shoots add to the length of the branches only by the length of the bud; and the leaves are put forth only in the spring, and become yellow in the autumn before those of vigorous trees, and at this time the lower leaves are greener than the upper. The branches incline towards the horizon, and form angles sometimes of sixty or seventy degrees. These apparent signs, and the thinness of the layer deposited by the sap, indicate that the tree makes but small additions to itself, and now it should be cut down. The nature of the soil should be examined, as well as the kind of tree, to enable a judgment whether the tree should be left to increase still further, or whether it will be more proper to fell it. An exact age cannot be assigned for each species, but it has been observed that an elm, situated in an insulated plantation, may be felled with advantage, when between seventy and eighty years of age.

Signs of decay in a Tree.—When a tree becomes crowned (that is, when the upper branches die), it infallibly indicates, especially for isolated trees, that the central wood is undergoing alteration, and the tree passing to decay. When the bark separates from the wood, or when it is divided by separations which pass across it, the tree is in a considerable state of degradation. When the bark is loaded with moss, lichens, or fungi, or is marked with black or red spots, these signs of alteration in the bark justify the suspicions of alteration in the wood within. When sap is seen to flow from clefts in the bark, it is a sign that the tree will soon die. As to wounds or gutterings, these defects may arise from local causes, and are not necessarily the results of old age.—*Loudon's Magazine.*

HARDINESS OF SWEET APPLE TREES.—In Wisconsin, where the thermometer not unfrequently sinks to 15° or 20° below zero, and where the fertility of the soil induces a very rapid growth in summer, the tenderer fruit trees are often severely injured in winter. A correspondent of the *Prairie Farmer* states that *sweet apples* are, for the most part, more hardy than acid ones, and better adapted to very severe climates. Out of one hundred and fifty varieties, twenty-two were sweet apples; of the latter, eleven proved themselves more hardy than any other eleven in the whole list, and only three of the sweet apples appeared to be tender.

THE POISON PLANTS.—“Ah, well may a shudder go through the frame as we hear the name of the next, the *Tanghin*, or Poison-tree of Madagascar! ‘Can such a fair young tree,’ we are tempted to exclaim, ‘be

charged with the horrible murders related of that poison?’ Surely no tale of death is told by these green leaves and not unattractive aspect? Go to the benighted islander, and, pointing to its glossy foliage, listen to the recital of the accused use to which this tree is turned which he will tremblingly pour into the ear. In the ordeal of the tanghin a great assembly is summoned to witness the trial of an unfortunate wretch, accused, justly or unjustly, of crime. The accused heard, the mock trial concluded, the proof of innocence or guilt is to make the accused swallow a nut of the tanghin tree, which is managed by the direction and under the superintendence of the priests. If his stomach is in a condition to reject this frightful poison, he is pronounced innocent, and is instantly released to receive the congratulation of his friends on his fortunate escape. But if he be a man of stronger digestion, his stomach retaining the deadly substance, the demonstration of his guilt is complete, and the convulsive death-struggles of the miserable man conclude the evidence, to the satisfaction of the assembled multitude. It is a mournful truth, that the issue of the tanghin ordeal is rather an inclination of the feeling of the priests towards the accused than of his innocence or guilt. It is easy to conjecture how this is managed. Well known to the wandering Indian is the shrub, whose light green bark and delicate foliage make it conspicuous in attractiveness even here—the *Madioc*-plant. The specimen is from four to five feet high, the natural stature being eight feet; and little could the ignorant spectator imagine, from the innocence and luxuriance of its aspect, that in its vessels run a deadly poison, and in its cells lay locked at the same time the wholesome and excellent food we call cassava!”—*Wanderings through the Conservatories at Kew.*

FLOATING BEE-HOUSES.—In Lower Egypt, where the flower harvest is not so early by several weeks as in the upper districts of that country, the practice of transportation is carried on to a considerable extent. About the end of October, the hives, after being collected together from the different villages, and conveyed up the Nile, marked and numbered by the individuals to whom they belong, are heaped pyramidically upon the boats prepared to receive them, which, floating down the river, and stopping at certain stages of their passage, remain there a longer or shorter time, according to the produce which is afforded by the surrounding country. After travelling three months in this manner, the bees having culled the perfumes of the orange flowers of the Said, the essence of roses of the Facium, the treasures of the Arabian jessamine, and a variety of flowers, are brought back, about the beginning of February, to the places from which they have been carried. The productiveness of the flowers at each respective stage is ascertained by the gradual descent of the boats in the water, and which is probably noted by a scale of measurement. This industry produces for the Egyptians delicious honey and abundance of beeswax.—*Dr. Beven.*

THE BULLFINCH'S WEEDS.—The bullfinch, when caged and fed much on hemp-seed, is particularly liable to become black. Many years ago, at Edenderry, near Belfast, where a pair of bullfinches had been for some time kept, the male died, and the female, whose grief for his loss was very evident, soon afterwards moulted, and assumed a full garb of black. Such being considered equivalent to the widow's “weeds,” was looked upon as almost supernatural; and more particularly so when, after a year of mourning, she, at moulting time, threw them partially off, and exhibited some white feathers in her wings.—*Thompson's Natural History of Ireland.*

It is more difficult to prevent being governed, than to govern others.

Mechanics and General Science.

IMPORTANCE OF SCIENTIFIC KNOWLEDGE TO PRACTICAL MEN, AND OF PRACTICAL KNOWLEDGE TO SCIENTIFIC MEN.

Continued.

Again—scientific knowledge amongst the labouring classes would elevate their calling, and induce many mistaken parents to educate their sons for mechanics, instead of thrusting them into the over crowded professions.

That the legal and medical professions are too much crowded needs no demonstration; the proof is before every body's face. Too many practitioners in both law and medicine, are without *practice*. A few the more fortunate, perhaps the older, or more learned, or best known, enjoy most of the business, and leave the others without even a competence unless derived from some other source. It is estimated that in New York there are some 700 or 800 lawyers and nearly as many Doctors. Of those there are 150 whose annual receipts are not more than £100; another 150 whose receipts are about £60; another 150 with receipts of £30; and still another 150 whose receipts average not more than £8 per annum. This estimate may be drawn in too dark colours, but I have taken it from a work published in New York. The remaining members of these professions are, of course, in the receipt of very large incomes. This may be regarded as a fair picture of the reality in all overgrown cities; in smaller towns and country places, there would not be so great a disproportion of professional men.

A change, however, is taking place in public opinion. On this subject the *New York Spectator* says:—"In the United States, a revolution is proceeding with respect to this matter, which will quietly, but surely tend to beneficial results. The Bar is no longer the resort of the ambitious youth of our country. The mechanical departments are preferred; there are now thirty young gentlemen in this city, who are serving their "time" as ship-wrights, architects, carpenters, &c. In a few years the United States will have the most accomplished mechanics in the world. A new class is springing up who will put the present men in the shade. The union of a substantial education with mechanical skill, will effect this. Indeed already we could name some mechanics who are excellent mathematicians, acquainted with French and German, and able to study books in those languages connected with their vocations. Heretofore fond fathers were wont to educate their sons as doctors or lawyers, to insure their respectability and success. That day is passed. Mechanics will take the lead, and in a few years will supply a large portion of the State and Federal Legislature."

Such is the language of one of the first papers of New York. Similar sentiments have been expressed in other and influential parts—and fortunate would it be for hundreds of young men of the present day, if they would follow such advice.

I would most earnestly recommend the sons of farmers who intend to follow the pursuits of their fathers, to study Chemistry and Natural

Philosophy. Farmer's sons in Canada generally devote the winter to study either at the Common School in their own neighbourhood, or at some public Seminary. No subject would open such a field for useful or interesting observation to the farmer as Chemistry and Natural Philosophy; none certainly would call for so frequent application as the principles of these Sciences. The whole process of vegetation, the germination of the seed, the growth of the plant, the composition of the seed and the plant, the soil and manures, are all appropriate subjects for Chemical investigation. Hence would follow the inquiries What kinds of soils are adapted for the growth of particular plants? what manures? what culture? what rotation in crops, if any? A few facts will show the importance of a better knowledge of the science of agriculture. The object of agriculture is, of course, to obtain the greatest quantity of grain from a given plot of ground. How does it happen that often there is a luxuriant growth of straw and but little grain? As, for example, in the culture of fine pliable straw for Florentine hats. That kind of culture which will produce particular kind of straw, is very different from that which will produce the greatest amount of grain. Rotation of crops is found in all countries to be absolutely necessary; but in many of the new colonies of America wheat has been grown for a century on the same fields. Why this? Again, crops are not always abundant in proportion to the quantity of manure, even though it be of the best kind and the culture the most careful, during a season the most favourable. Fields which have become unfitted for one kind of grain are not unsuited for another.

Circumstances are constantly occurring to the farmer, which thwart his best calculations. But they are all subject to fixed and irrevocable laws; and were the practical agriculturists familiar with the principles of chemistry, many of these difficulties would be solved. Very little progress can, however, be made in the application of science to agriculture, while so powerful prejudices exist among the farmers. Perhaps another generation must arise, carefully educated in all the principles of science applicable to the growth and culture of plants, ere any important change can be expected.

The principles of natural philosophy are of vast importance to farmers, in the erection of buildings, the construction of roads, bridges, mills, windmills, &c., all of which are done, in whole or in part, by the farmers of a new country. The wheel and axle, the screw, the lever, and all the mechanical forces, are brought into constant requisition. I have often been exceedingly pained in observing young men, farmers' sons, wasting their time over the dead languages, or some other pursuits equally useless to them, instead of studying chemistry and natural philosophy, the principles of which would be required every day of their lives. Human life is a journey; and men should carry with them just what they will require, and not burden themselves with a Latin dictionary and Horace, when they need the axe, the lever, or the chemistry.

In every department of life, even the most humble, such knowledge would be of incalculable

benefit to society, for upon their skilful services depend the lives and happiness of the rest of mankind. "The farm servant, or daily labourer," says Lord Brougham, "whether in his master's employ, or tending the concerns of his own cottage, must derive great practical benefit, must be both a better servant and a more thrifty and therefore comfortable cottager, for knowing something of the nature of soils and manures, which chemistry teaches,—and something of the habits of animals and the qualities and growth of plants, which he learns from natural history and chemistry together. In truth, though a man is neither a mechanic nor a peasant, but only having a pot to boil, he is sure to learn from science lessons which will enable him to cook his morsel better, save his fuel, and both vary his dish and improve it. The art of good and cheap cooking is intimately connected with the principles of chemical philosophy, and has received much, and will receive more, improvement from their application." The art of making and stirring a fire, of washing and bleaching, of eradicating stains from cloth, are all conducted on philosophical principles; and those engaged in them would be more expeditious, safer and wiser operators, by such scientific knowledge as would be applicable to their operations.

How greatly has such knowledge elevated the condition of man, and how much higher might it elevate him. Compare the savage, as he roams in his native state through the interminable forests of our vast continent, with the descendants of the European living by his side; and behold what art and science have wrought, even in the ordinary avocations of life. The one lives upon the fruits of the chase, obtained by physical force; the other, confident in his knowledge of the laws of nature, in seed time and harvest, sows and reaps in abundance. The one lodges in his rude wigwam, or cave, or crawls into a hollow log; the other resides "the proud lord of his gorgeous mansion" or neat cottage, erected and furnished by the handy workmanship of a hundred artists, his table spread with the productions of all climes, borne across the mighty deep, and over continents, by the power of wind and steam. The bow and arrow and stone tomahawk are the rude implements of the chase and of warfare of the one; the other, skilful in the arts of peace as in those of war, has converted one portion of the earth, upon which he treads, into the musket, the cannon, and the glittering steel, and another into a combustible elastic powder, which, lighted by a spark, hurls the destructive thunderbolt. The one moves timidly along the beach in his bark canoe, propelled by his own feeble hand; the other launches fearlessly upon the broad ocean, in his proud man-of-war, driven by the winds of heaven, or the vapour of the very element through which he moves, neither tide nor tempest impeding his course. Guided by his faithful magnet, which neither slumbers nor sleeps, he safely traverses the trackless deep, through storms and midnight darkness. If he meets a homeward bound vessel upon the ocean, he tells with unerring accuracy his position on the globe, by a small glass formed of the sand which we carelessly tread beneath our

feet, and, with a few scratches of a pen, informs his distant wife and children and friends of the very spot upon which at that hour he floats. The one moves snail-like over the land, drawn by his dogs; the other flies with the velocity of the tempest, in his steam-driven car. The one strips the covering from the wild beast, and sews it with the thorn and the thong, to his own limbs; the other is clothed with the most exquisite skill, the workmanship of many artists. The one records and transmits his thoughts by the knots of the wampum; the other converts the dirty rag into beautiful paper, and stamps his thoughts imperishably and with lightning speed upon it, and hands them down to coming ages.

But why multiply instances. There is not more difference between the savage and civilized, than between the savage and the beast; and there is not more difference between the savage and civilized, than there might and *may* be between the civilized of the present and no distant day. Can any one suppose that we have attained perfection in the arts of life? Are there no more improvements to be made? Can we add nothing to what our ancestors have left us? Have they ascended all heights, descended all depths, and explored all space? Cannot we, by standing on the heads of our forefathers, see farther than they? If they have applied steam to the car, why may we not apply it to the plough? why may we not sow, and reap and thrash, by steam; nay, and clear away the forest by the same power? If they have applied steam to saw and plane, and fit the board for the building, why may we not apply it to quarry and cut the stone, to make and lay the brick, and plaster the wall? If they have applied steam to spinning and weaving the delicate fibre, why cannot we cut and sew the coat and shoe, the cloak and the gown, by the same process? Who can doubt vast improvements in all the arts of life, when he sees the success of machinery in forming the delicate pin and watch, the exquisite thread of the silk, the cotton, the linen, and the wool; and the weaving of every pattern, performed with more skill than by the mechanism of the hand? Who can suppose that we have reached the goal of human perfection, and crowded all the powers of nature into the service of man, when he sees him commanding the sun-beam to delineate the "human countenance divine," the lightnings of heaven to record his thoughts, the invisible galvanism to illumine his dwellings, the opaque flinty rock and drifting sand turned into transparent glass, calling down the stars of heaven and magnifying the teaming millions of a drop of water.

(To be continued.)

USEFUL AND INGENIOUS IMPLEMENT FOR MANUAL LABOUR.—It must have struck many of our practical readers, witnessing the rapidity with which mechanical operations are performed upon the soil by means of the horse hoe, the moulding plough, and other machinery, that hand labour, armed with few implements, anything, if at all, in advance of the old Dutch hoe, has been left far behind. Within the last few days, however, our attention has been called by the inventor, C. K. Swe-wright, Esq., of Cargilfield, Trinity, near this city, to a working model of an implement, manufactured under his direction, by our able agricultural engineer, Mr. Slight,

of Leith Walk, whereby, *ceteris paribus*, manual labour has at length been placed upon a par with horse power when employed in field labour. The implement thus devised by Mr. Sivewright was originally a grubber of five flat hoes, arranged triangularly in the ordinary manner, and in this state it was found to perform with the greatest facility all the labour usually effected by means of the Dutch hoe in cleaning the ground, stirring the earth between rows and drills, extirpating weeds, and working and pulverizing the soil to the depth of four inches; the flat hoes being so arranged, as, at each entrance, to work a breadth of 17 inches, which, however, might, by means of a contracting and expanding transverse bar at the base of the triangle, be reduced to thirteen inches for going between drills. Mr. Sivewright found, that with this implement he could completely prepare his garden ground at Gargilfield, extending two acres, for crops, in many instances, without resorting to the use of any other means whatever; and that, too, with the greatest saving of labour, as it simply required one man to draw it through the ground, and he could do so with great rapidity. We ought to mention, however, that Mr. Sivewright's is a fine light sandy soil, in a beautiful state of pulverization, and presenting less than usual obstruction to the working of machinery. But we have no doubt that in any garden soil whatever, very little more difficulty would be presented to the action of this particular hand machine. Being composed entirely of iron, its great lightness, acuteness and strength, cause it to be very easily worked; and being, moreover, supported by a fore-wheel, as in some of Ransomes' celebrated ploughs, figured in this day's Journal, the shifting of this wheel regulates the depth to which the hoes and tines may be entered in the soil; and once entered, they would undoubtedly cut and loosen the stiffest soil, pulled by a single labourer. The inventor having accomplished this object, was not satisfied, however, until he had succeeded in converting his hand-grubber, by the simple addition of double mould boards (removing four of the hind tines), into an effective drill-plough, both for raising ridges and earthing or moulding up potatoes, turnips, all and plants growing in drills. The fore-tine being left attached to the machine as a cutter, the double mould-boards are joined on to the sides by a hinge passing in front, and the earth thrown up is moulded gently down upon the ridge by means of a comparatively trifling weight hooked on to the back bar of the implement, at the centre. As the implement is drawn along the drill, the turned-up earth, therefore, passes under the curves of the mould boards, and is beautifully, smoothly, but lightly pressed down upon the sides of the opposite drills, without choking up the lower leaves of the growing plant, as is too frequently the case with the drill plough. The weight at first attached to the implement, in order to mould down the earth upon the drills, had been twenty-one pounds; but this was found to be unnecessarily large, and to offer considerable impediment to the labour; though still, a good workman could effect a great deal in a light soil, even with this. A weight of seven pounds, however, has been found by Mr. Sivewright perfectly adequate; and we never saw better or more systematically formed drills than he has thrown up in a half-acre plot of potatoes by means of this implement. The saving of labour is such, that a piece of garden ground, which a man was formerly five days in hoeing, has been worked by one man, with the machine, in one day. For instance, the half-acre plot in question could be earthed up at the rate of ordinary labour of which this machine admits, in six hours; an able-bodied labourer, or indeed a lad, could therefore accomplish, single-handed, a whole acre in a day of twelve hours. The simplicity of construction, and necessary cheapness of these machines (for we have no doubt Mr. Slight could turn them out at a most reasonable price), commend them very strongly to market-gardeners, cottagers, small farmers, nursery grounds,

gentlemen's and family gardens—in short, in all situations where it is inconvenient, inexpedient, or even impossible to introduce horse labour. Mr. Sivewright, with the utmost liberality, has authorised us to state that he is anxious only for the adoption of it, wherever it may be found useful, and, in fact, makes a present of the invention to the public; nay, in order to facilitate this purpose, he will be happy to send round his gardener with any one desirous of witnessing the work which the implement has performed; and the implement itself is on view at Mr. Slight's, where its advantages we are sure, may be ascertained by any practical person at a single glance.—*Scottish Agricultural Journal*.

ANALYSES OF MANURES.—At a late meeting of the Highland Agricultural Society, Mr. Finne spoke of the great advantage which had been derived by farmers in Scotland from the analyses of portable manures, upon which, he estimated, nearly one-half of the green crop of that country is dependent. The amount of guano, for instance, imported in 1837, was upwards of 220,000 tons. Great adulteration had been practised with guano; and bone-dust had been mixed with ground oyster-shells. Various manufactured manures, of the constituents of which the farmer could not be acquainted, were offered for sale. In illustration he related the following: Some years ago I joined with two or three farmers in the purchase of some tons of nitrate of soda. None of us derived any benefit from the application of it. Most fortunately I had some left—got it analysed by Mr. Kemp at the College; and when the secret was explained, it was to a great extent mixed with common salt.—I heard of a cargo shipped to a party in London; a chemist was ordered to examine it before taking it from the ship. The adulteration was detected, and immediately the shipload was ordered off to Scotland, and sold amongst the farmers. I once purchased a quantity of guano from a party in Leith. Professor Johnston had given an analysis of it, but the sample sent to him had been very different from the stock. I found upon taking delivery that all was not right. I then had a sample from the stock analysed, and had no difficulty in procuring an abatement of 10 per cent. from difference of value. I cannot conceive how any agriculturist who expends his hundreds a-year upon portable manures is justified in applying them before being tested, and would grudge a few shillings per annum to obtain a chemist of skill who could satisfy him as to the purity of the article upon which he is not only expending a large sum of money, but upon the genuineness of which his green crop, and every succeeding crop in the rotation, is dependent; for, without a knowledge of the nature and properties of the materials employed by the agriculturist, it is evident that the result of many of the laborious and extensive processes incident to his daily occupation must be a matter of mere chance—thus contributing more than any thing else to the precariousness of the profits upon which his prosperity depends. I may be told this is a tenant's question, and let him look after his own interest and he will fare the better; but I hold whatever is necessary for the tenant cannot be dispensed with by the landlord; and if from not having a ready and cheap way of having his manures analysed, the loss of a crop is the consequence, is not the landlord's rent endangered? But I would respectfully submit that these portable manures, now so important an element in good farming, and for which I would say a chemist's services are required, leaving every other consideration, have done much already for the proprietors of land."

LANGUAGES.—There are 3,664 known languages now used in the world. Of these 937 are Asiatic, 587 European, 276 African, and 1,624 American, languages and dialects.

Domestic and Miscellaneous.

FEVER MAKING AND GOLD WASTING.—As nearly as we can calculate, we produce in London, by our present arrangement, 5,000 cases of malignant fever annually, at an average cost of 100*l.* per case, though the figures might be run up considerably higher by including in the estimate certain collateral results. It is difficult, of course, to be precise in this item of the account, but almost every conclusion tends to prove that the Thames is the chief delinquent in all serious infringements of sanitary rules. When we come to the other side of the question, the results are more exactly ascertainable. The unnatural uses of the river are indistinctly recorded, but its natural uses are computable to a fraction. As a general rule, it may be said, that the annual value of the sewerage water of a large town is equivalent to a poll-tax of 1*l.* per head. This estimate has been even run up to 1*l.* 17*s.*, but the more moderate figures would be abundantly large for our purpose. Dr. Arnott, in his *Report upon popular Fevers in Edinburgh and Glasgow*, says that the drainage now poured into the Thames, estimated by the effects actually produced in the neighbourhood of Edinburgh, would exceed in value 500,000*l.* a-year; and he sagaciously proceeds to inquire why, if clean water can be pumped into London from twenty miles distance, foul water may not be pumped out of it by similar machinery? We never, it is said, know the value of a blessing till we lose it, but here are we losing daily one of the most precious treasures of an agricultural community with no idea of its value at all. If we are to believe half the figures now before us, "fluid town manure" is a commodity infinitely more valuable than lapis lazuli or platinum; in fact, if the true philosopher's stone exists at all, it must be in some concentrated form of this neglected substance. Its collection and preservation would "render us wholly independent of all foreign manures or guano," and would disengage ships enough to have influenced the debate on the navigation laws. It would "clothe the whole Island with verdure, and endue it with inexhaustible fertility. When we come to details, the allegations are still more astounding. Carrots a foot in diameter, cucumbers two feet in length, pines of an "unusually deep and healthy complexion," and peaches as large as cauliflowers, are among the ready creations of this powerful agent. As to pasture lands, the results are miraculous. On Sir Robert Peel's own model manor at Drayton, it was plainly and credibly shown to the assembled agriculturists that they might, by the aid of this manure raise tons upon tons of milk-giving, fat-producing, muscle-making grass, *six times a-year!*"—*Times*.

ECONOMY OF FARMING.—In every department of industry, except that of the farmer, special efforts are made to cheapen the expense of producing articles of manufacture. This has resulted in diminishing also the price at which articles are sold, though the profits to the manufacturer, from the extensive sale of his articles, are larger than formerly. Why, then, may it not with propriety be asked, does the farmer in most instances continue in the beaten track of olden time, instead of availing himself of the facilities which have been furnished him for cheapening the cultivation of his farm? How many farmers content themselves with a preparation for a single crop, instead of adopting a system of manuring that will, by a proper rotation, be available for a succession of crops. How little attention is given, after all, to systems which have been adopted, by which the products of many farmers have been largely increased, and the expenses of cultivation, by the use of improved implements and the right use of manures, have been very materially lessened.

Now it must be evident that any farmer who does

not avail himself of the means within his reach, and thus economize the expenses of his farm, is pursuing a course that must result in great loss, and in permanent injury. It may be said, and doubtless truly, that this deficiency arises from want of information. But are not agricultural journals published at such rates as to bring not only one, but several within the means of every farmer? and can it be excusable in a farmer to make his ignorance his apology, when the necessary means of information are placed within his reach? Our farmers read far too little of what is going on in the world around them. In the pages of our agricultural journals, in the proceedings of our agricultural societies, information is afforded that would enable one of these farmers greatly to increase his income, whilst at the same time his farm would be rising in value and increasing in fertility. Let me then urge upon the farmers of our country to patronize liberally the agricultural press. Give to their columns the results of experience on their every farm—add to the usefulness of these works by contributing the results of their observations—and thus make these papers what the editors desire them to be, the repository of the experience of practical farmers. Were this done, I doubt not economy in the management of the farm would prevail every where, as it now does in comparatively few localities.

Much might be accomplished toward attaining the object suggested, *economy*, if the farmer should become as systematic in his accounts with his farm as he is with individuals. I am pleased to learn that many of our farmers are adopting this system in their operation. Not long since I was permitted to look at a farmer's account for the year; and I found a statement, with all the necessary facts to substantiate it, of the expense of all his crops—that is, what each had cost him per bushel. Thus, wheat 38 cents, oats 13, barley 29, beans 37, &c. Now who cannot see that this farmer can at once determine whether the course he is pursuing is the one best for his interest, or whether a change is necessary? and, if so, he knows where to make it.—*Genesee Farmer*.

DISTRIBUTOR FOR LIQUID MANURE.—While examining the above implement and its performances at the residence of the above gentleman, we noticed an extremely neat distributor for liquid manure, which merits general adoption, as being comprised in an ordinary wheelbarrow, in which is placed a cylinder, apparently of sheet-iron, with a strainer at top, through which the liquid manure is passed, and a pipe and valve at bottom, communicating with a perforated copper tube, hooked up transversely to the stiles of the barrow. The barrow being pushed along, the person in charge of it, by means of the valve, may thus distribute the liquid manure in such quantities, and at such times and places, as he deems proper, without stopping the barrow, as an iron rod attached to the handle, and connected with the valve, enables him to open and shut it at pleasure.—*Id.*

TRANQUILITY.—Tranquility is the wish of all;—the good, while pursuing the track of virtue—the great, while pursuing the star of glory—and the little, while creeping in the sties of dissipation, sigh for tranquility, and make it the great object which they ultimately hope to attain.

How anxiously does the sailor, on the high and giddy mast, when on tempestuous seas, cast his eyes over the foaming billows and anticipate the calm security he hopes to enjoy when he reaches the long wished-for shore! Even kings grow weary of their splendid slavery, and nobles sicken under increasing dignities. All in fact, feel less delight in the actual enjoyment of worldly pursuits, however great and honourable they may be, than in the idea of their being able to relinquish them and retire to

"—Some calm, sequestered spot,
The world forgetting—by the world forgot!"

TIME FOR CUTTING BUSHES.—Much has been written on this subject, the sprouting being a great annoyance. The same laws govern all timber, but some are more susceptible than others. Where tenacity of life is feeble, a comparative slight cause will produce death. The leaves are the respiratory organs, or breathing apparatus, of plants, and hence, deprive a plant of these, and the health will be greatly impaired; if the plant be tender and the deprivation be persevered in, death will follow. Several years since I selected the red raspberry to make experiments on. This is a very hardy plant. I selected healthy stems. When the leaves had reached their maturity, before the petioles, or leaf stalks, became woody, I carefully picked them without inflicting any further injury on the plants. Part of the plants never sent out another crop of leaves, and those that did, only furnished a scanty crop of an indifferent quality. These were removed as before, and another fraction, larger than before, failed me. The rest gave a miserable crop of straggling leaves; these were plucked and all the plants died. The roots were left undisturbed, the naked stems uncut till another season, to see if resurrection awaited them; but the work of death was complete. The same experiment, with equal success, has been tried on shrubs and trees. Hence, the utility of sheep in the destruction of briars and bushes. In cutting, cut them when the leaf is mature; a few may sprout, cut these when full leaved. The repetition will be seldom.

THE CANADA GOOSE.—The Canadian, or American wild goose, (*Anser canadensis*), and the Chinese goose, (*A. cygnoides*), occupy, as a writer observes, "a sort of debateable ground," so that naturalists have been in doubt as to which family they should be referred; and hence some have applied to them the name of swan-geese.

The Canadian goose is extensively known. It is a migratory bird, and in its semi-annual journeys, traverses the northern part of the continent almost from the equator to the pole; and there are but few of the inhabitants of this country that are not familiar with its shrill and animating cry. Its autumnal flight lasts from the middle of August to the middle of October, and the vernal flight from the middle of April to the middle of May. Various stops are made, however, at convenient points, between the winter and summer localities.

It breeds in its wild state only at the north. Its favorite resort is the coast of Labrador, and the region about Hudson's Bay; though Hearne speaks of having seen great numbers within the Arctic circle, pushing their way still northward.

To the inhabitants of the regions where it breeds, the bird is regarded as an important source of subsistence. Its arrival in spring is anxiously looked for, and the Indians denominate the month the goose moon. It is said that the carcasses of these birds are dealt out as rations to the men employed by the Hudson's Bay Company. "One goose, which when fat weighs about nine pounds, is the daily ration to one of the Company's servants during the season, and is reckoned equivalent to two snow-geese, (*A. hyperborea*), or three ducks, or eight pounds of buffalo and moose meat, or two pounds of pemmican, or a pint of maize and four ounces of suet." [Richardson.] Those which are killed after the weather becomes cool in the fall, are frozen and kept in the feathers for a winter stock of provisions.

Richardson describes the habits of these geese in his *Fauna Boreali-Americana*, as follows:

"About three weeks after their first appearance, the Canada geese disperse in pairs through the country, between the 50th and 67th parallels, to breed, retiring at the same time from the shores of Hudson's Bay. In July, after the young birds are hatched, the parents moult, and vast numbers are killed in the rivers and

lakes, when from the loss of their quill-feathers, they are unable to fly. When chased by a canoe, and obliged to dive frequently, they soon become fatigued, and make for the shore with the intention of hiding themselves, but as they are not fleet, they fall an easy prey to their pursuers. In autumn they again assemble in flocks on the shores of Hudson's Bay, for three weeks or a month previous to their departure southwards."

The Canada goose has been domesticated and is not an uncommon inhabitant of the poultry-yard, either in this country or in England. It does not breed till it is three years old. It is somewhat larger than the common goose, and its flesh is better; it has also more feathers and of better quality. It is very hardy, and rears its young with much certainty. It is believed to be quite as profitable as the common kind; and considering its beauty and usefulness, it would seem desirable that it should be multiplied in a domestic state.

The Canada goose will breed with the common, and also with the Chinese goose,—but the hybrid offspring are in all cases, incapable of procreation. Some poultrymen, however, make it an object to breed mongrels, as they are called. They grow rapidly, and acquire a larger size than either of their parents, and their flesh is of so fine a flavor, and so highly prized, that it readily commands a higher price in the market. The finest mongrels are produced between the wild and the Bremen, and the wild and the Chinese geese.

It is stated on the authority of Buffon, that the Canadian goose, kept in a domestic state in France, was found to interbreed familiarly with the swans. Have any attempts been made to cause this goose to breed with the American swan, and with what success?

It may be remarked that the wild goose (*A. palustris*) of Europe, is the parent of our common domestic goose, and of course a distinct species from the Canadian goose. —*Albany Cult.*

ASHES AS MANURE FOR GRASS LANDS.—There is scarcely any part of this country where leached ashes cannot be obtained in greater or less quantity; and in the vicinity of asheries, abundance may generally be had. If the following remarks by Count Chaptal are applicable to soils, of whatever materials they may be composed, a knowledge of this property of leached ashes would, in many instances, be of great value. At all events, the experiment is easily performed on a moderate scale.

"The ashes, produced by the combustion of wood in our common domestic fires, give rise to some very remarkable results. Without being leached, these ashes are much too active; but after having been deprived by the action of water, of nearly all their salts, and employed in this state, under the name of *leached ashes*, they still produce great effect.

"The action of the leached ashes is most powerful upon moist lands and meadows, in which they not only facilitate the growth of useful plants, but if employed constantly for several years, they will free the soil from weeds. By the use of them, land constantly drenched with water may be freed from rushes, and prepared for yielding clover and other plants of good kinds."

It has been frequently supposed that ashes applied to wet, heavy soils, is injurious. This is probably owing to the application being too uneven, and in too large quantities, and to the want of mixing them intimately with the soil. Chaptal says, "Wood ashes possess the double property of amending a wet and clayey soil, by dividing and drying it, and of promoting vegetation by the salts they contain."

It is well known, that the evenly spread and intimately intermixed layer of ashes which soils receive by burning the turf, produces extraordinary effects upon grass lands.—*Genesee Farmer.*

LIST OF PREMIUMS

AWARDED BY THE PROVINCIAL AGRICULTURAL ASSOCIATION,

At Kingston, September, 1849.

CLASS A.—DURHAMS.

BULL.

	£	s.	d.
1. Ralph Wade, Senr., Hope, New. District	7	10	0
2. J. W. S. Masson, Seymour, "	4	0	0
3. G. Longley, Maitland, Johnstown District	2	0	0

DURHAM BULL, 2 YEARS.

1. M. Jonas, Darlington, New. Dis.	5	0	0
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DURHAM BULL, 1 YEAR.

1. Ralph Wade, Senr., Hope, New. Dis.	4	0	0
2. John Wetenhall, Nelson, G. D.	2	0	0
3. John Ovens, Kingston, M. D.	1	0	0

DURHAM BULL CALF, 1849.

1. John Wade, Hope, N. D.	2	10	0
2. George Miller, Markham, H. D.	1	10	0
3. " "	1	0	0

DURHAM COW.

1. John Wade, Hope, New. Dis.	4	0	0
2. R. Wade, Senr. "	2	10	0
3. Ralph Wade, Jr. "	1	10	0

DURHAM HEIFER, 2 YEARS.

1. Ralph Wade, Senr., Hope, New. Dis.	3	0	0
2. A. Cowan, Jr. Pittsburgh, M. D.	2	0	0

DURHAM HEIFER, 1 YEAR.

1. Ralph Wade, Jr., Hope, New. Dis.	2	10	0
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DURHAM HEIFER, 1849.

1. Ralph J. Wade, Hope, New. Dis.	1	10	0
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CLASS B.—DEVONS.

DEVON BULL.

1. John Masson, Cobourg, New. D.	7	0	0
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DEVON BULL, 2 YEARS OLD.

1. Asa A. Burnham, Cobourg, N. D.	5	0	0
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DEVON BULL, 1 YEAR OLD.

1. James B. Ewart, Dundas, G. D.	4	0	0
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DEVON COW.

1. John Masson, Cobourg, New. Dis.	4	0	0
2. " " " "	2	10	0
3. Asa A. Burnham, " "	1	10	0

DEVON HEIFER, 2 YEARS OLD.

1. James B. Ewart, Dundas, G. D.	3	0	0
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DEVON HEIFER, 1 YEAR.

1. John Masson, Cobourg, New. D.	2	10	0
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CLASS D.—AYRSHIRES.

AYRSHIRE BULL.

1. James B. Ewart, Dundas, G. D.	7	10	0
2. George Stanton, St. George "	4	0	0

DISCRETIONARY.

John Cookman, Odletown, L. C.

AYRSHIRE BULLS, 2 YEARS.

1. A. Cameron, Garden Island, M. D.	5	0	0
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AYRSHIRE COW.

1. James B. Ewart, Dundas, G. D.	4	0	0
2. John Weir, W. Flamborough, "	2	10	0
3. James B. Ewart, Dundas, "	1	10	0

CLASS E.—GRADE CATTLE.

GRADE COW.

1. Ralph Wade, Jr., Hope, New. Dis.	4	0	0
2. John Flanigan, Kingston, M. D.	2	10	0
3. J. L. Macdonald, Gananoque, J. D.	1	10	0

GRADE HEIFER, 2 YEARS.

1. James Morton, Kingston, M. D.	3	0	0
2. Hugh Rankin, " "	2	0	0
3. " " " "	1	0	0

GRADE HEIFER, 1 YEAR.

1. J. L. Macdonald, Gananoque, J. D.	2	10	0
2. W. S. Macdonald " "	1	10	0
3. W. Wilson, Kingston, M. D.	1	0	0

GRADE HEIFER, 1849.

1. C. Hinds, Haldimand, New. Dis.	1	10	0
2. John Ovens, Kingston, M. D.	0	15	0
3. Rev. J. Allen, Wolfe Island, M. D.	0	10	0

FAT OX OR STEER.

1. C. Hinds, Haldimand, New. Dis.	2	10	0
2. J. & W. Breden, Kingston, M. D.	1	5	0

FAT COW OR HEIFER.

1. Ralph Wade, Jr., Hope, New. D.	2	10	0
2. J. & W. Breden, Kingston, M. D.	1	5	0

YOKE WORKING OXEN.

1. John Thompson, Napanee, M. D.	3	0	0
2. John D. Purdy, Sydney, V. D.	2	0	0
3. A. Miller, Ernestown, M. D.	1	0	0

CLASS F.—AGRICULTURAL HORSES.

STALLIONS.

1. Joseph Ashford, Toronto, H. D.	10	0	0
2. James Powell, York, "	6	5	0
3. Thos. Nattrass, Cavan, New. D.	2	10	0

STALLION, 3 YEARS.

1. Charles Smith, Ernestown, M. D.	5	0	0
2. S. Richards, Marysburgh, P. E. D.	3	0	0

STALLION, 2 YEARS.

1. James Garrey, Elora, Wellington Dis.	1	0	0
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GELDING OR FILLY, 2 YEARS.

1. Joseph Hawley, Ernestown, M. D.	3	0	0
2. A. McIntyre, Pittsburgh, "	2	0	0
3. S. Hart, Picton, P. E. D.	1	0	0

MATCHED CARRIAGE HORSES.

1. Darius Doty, Ingersoll	4	0	0
2. S. Stevens, Belleville	3	0	0
3. W. H. Gordinier, Ernestown, M. D.	1	0	0

DRAUGHT HORSES.

1. John Wilson, Oshawa, Home Dis.	4	0	0
2. John Rennie, Camden, M. D.	3	0	0
3. H. Huffinan, Ernestown.	1	0	0

BROOD MARE AND FOAL.

1. James Gibson, Kingston, M. D.	5	0	0
2. W. Fairman, Pittsburgh "	3	0	0
3. James Creig, Charlottenburg, E. D.	1	0	0

CLASS G.—THOROUGH-BRED HORSES.

STALLIONS.

1. John Gibson, St. Catharines, Niag. D.	5	0	0
2. John Norton, Kingston, M. D.	3	0	0
3. R. Sproul, Camden	1	0	0

STALLION, 3 YEARS.

1. G. A. Cumming, Kingston, M. D.	5	0	0
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STALLION, 2 YEARS.

1. John Ovens, Kingston	1	0	0
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MARE AND FOAL.

1. J. McNince, Pittsburg, M. D.	5	0	0
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CLASS H.—SHEEP.

LEICESTER RAM.

1. George Miller, Markham, H. D.	4	0	0
2. Ralph Wade, jr., Hope, N. D.	2	0	0
3. Dr. Hayward, Fredericksburg, M. D.	1	0	0

SHEARLING RAM.

1. A. Cameron, Garden Island, M. D.	2	10	0
2. E. Archer, York, H. D.	1	10	0
3. John Hawkins, Wolfe Island, H. D.	0	15	0

RAM LAMB.			BOAR PIG, 1849.		
1. J. G. Miller, Markham, H. D.	2	0 0	1. J. W. Parmenter, Gananoque, J. D.	2	0 0
2. John Hawkins, Wolfe Island, M. D.	1	0 0	2. J. Walker, Mill Creek, M. D.	1	10 0
3. A. Cameron, Garden Island, M. D.	0	10 0	3. J. W. Parmenter, Gananoque, M. D.	1	0 0
EWES, TWO SHEARS AND OVER.			SOW PIG, 1849.		
1. John Wilson, Oshawa, H. D.	4	0 0	1. Rev. J. Allen, Wolfe Island, M. D.	2	0 0
2. John Thompson, Nepean, D. D.	3	0 0	2. John Gordanier, Ernestown	1	10 0
3. Wm. Holditch, Loughboro', M. D.	1	10 0	3. Thomas Briggs, Kingston	1	0 0
SHEARLING EWES.			CLASS J.—AGRICULTURAL IMPLEMENTS.		
1. Thomas Scott, Amherst Island	3	0 0	WOODEN PLOUGH.		
2. John Hitchins,	2	0 0	1. E. McTavish, Darlington, N. D.	2	0 0
3. John Dunn, Pittsburg	1	0 0	2. A. McIntyre, Pittsburg, M. D.	1	10 0
EWE LAMBS.			3. John Gilrea, Scarborough, H. D.	1	0 0
1. George Miller, Markham, H. D.	1	10 0	IRON PLOUGH.		
2. A. McMillan, Kingston, M. D.	1	0 0	1. J. Newton, Cobourg, N. D.	2	0 0
3. A. Irvin,	0	10 0	2. A. Fleck, Montreal	1	10 0
SOUTH DOWNS.—RAM.			3. E. McTavish, Darlington, N. D.	1	0 0
1. John Spencer, Whitby, H. D.	4	0 0	Diploma to John Newton, of Cobourg, a double-mould-board plough and cultivator combined.		
2. James Glassford, Glenburnie, M. D.	2	0 0	FANNING MILL.		
3. P. Davy, Bath, M. D.	1	0 0	1. D. & J. Coon, Prescott, J. D.	1	10 0
SHEARLING RAM.			STRAW CUTTER.		
1. Asa A. Burnham, Cobourg, N. D.	2	10 0	1. Richard Tremain, N. D.	1	0 0
RAM LAMB.			2. C. Clarke, Paris, G. D.	0	15 0
1. P. Davy, Bath, M. D.	2	0 0	SMUT MACHINE.		
2. John Spencer, Whitby, H. D.	1	0 0	1. A. Duncan, sen., Cobourg, N. D.	1	10 0
EWES, TWO SHEARS AND OVER.			2. " " "	0	15 0
1. John Spencer, Whitby, H. D.	4	0 0	GRAIN CRACKER.		
EWE LAMBS.			1. Peter Bristol, Fredericksburgh	2	0 0
1. John Dunn, Pittsburg, M. D.	1	10 0	WAGGON, TWO-HORSE.		
MERINOS AND SAXONS.—RAM.			1. J. D. Purdy Sidney, V. D.	2	0 0
1. A. D. Dougall, Picton, P. E. D.	4	0 0	2. Thomas Armstrong, Camden, M. D.	1	0 0
2. Capt. Collaton, Haldimand, N. D.	2	0 0	3. J. Walker, Mill Creek	0	10 0
3. M. Gibson, St. Catharines, N. D.	1	0 0	HORSE CART.		
SHEARLING RAM.			1. George Mitchell, Gananoque, J. D.	1	0 0
1. Daniel Hayden, Leeds, J. D.	2	10 0	2. R. Spooner, Kingston, M. D.	0	10 0
2. Capt. Collaton, Haldimand, N. D.	1	10 0	WOODEN ROLLER.		
3. M. Gibson, St. Catharines, N. D.	0	15 0	1. Joseph Ferris, Kingston, M. D.	1	5 0
RAM LAMB.			REAPING MACHINE.		
1. Capt. Collaton, Haldimand, New. Dist.	2	0 0	1. Samuel Chestnut, jr., Pittsburg, M. D.	5	0 0
2. James Coile, sen., Wolfe Island, M. D.	1	0 0	CULTIVATOR.		
FAT SHEEP—WETHERS.			1. Robert Brice, Mount Pleasant, G. D.	1	10 0
1. George Miller, Markham, H. D.	3	0 0	2. J. B. Marks, Pittsburg, M. D.	1	0 0
2. Ralph Wade, jr., Hope, N. D.	1	10 0	3. C. Penner, Lachine, L. C.	0	10 0
3. " " "	1	0 0	HORSE SHOES.		
FAT EWES.			1. Peter Kilduff, Kingston	0	15 0
1. A. Cameron, Garden Island, M. D.	2	10 0	2. J. Newton, Cobourg, N. D.	0	10 0
CLASS I.—PIGS, LARGE BREED.			3. M. Purser " "	0	5 0
BOAR PIG, 1 YEAR AND OVER.			NARROW AXES.		
1. Daniel Hayden, Leeds, J. D.	3	0 0	1. Charles Vale, Toronto, H. D.	0	15 0
2. W. Stark, Pittsburg, M. D.	2	0 0	2. " " "	0	10 0
3. Samuel Baldwin, Belleville, V. D.	1	0 0	3. Thomas Armstrong, Camden, M. D.	0	5 0
BREEDING SOW, 1 YEAR AND OVER.			MANURE FORKS.		
1. Thomas Russell, Leeds, J. D.	3	0 0	1. Charles Vale, Toronto, H. D.	0	15 0
2. J. W. Parmenter, Gananoque, J. D.	2	0 0	2. Skinner & McCullagh, Brockville, J. D.	0	10 0
3. Daniel Hayden, Leeds	1	0 0	3. Trickey & Co., Clarke, N. D.	0	5 0
BOAR PIG, 1849.			HAY FORK.		
1. Thomas Russell, Leeds, J. D.	2	0 0	1. Skinner & McCullagh, Brockville, J. D.	0	15 0
SOW PIG, 1849.			2. Charles Vale, Toronto	0	10 0
1. Thomas Russell, Leeds, J. D.	2	0 0	3. Trickey & Co., Clarke, N. D.	0	5 0
2. " " "	1	10 0	SCYTHES SNAITHS.		
3. Joseph Caniff, Belleville, V. D.	1	0 0	1. Skinner & McCullagh, Brockville, J. D.	0	15 0
SMALL BREED—BOAR 1 YEAR AND OVER.			2. " " "	0	10 0
1. W. Wilson, Kingston, M. D.	3	0 0	3. " " "	0	5 0
2. James Sparks	2	0 0	OX YOKE AND BOWS.		
BREEDING SOW, 1 YEAR AND OVER.			1. H. Spooner, Kingston, M. D.	0	15 0
1. John Baker, Wolfe Island, M. D.	3	0 0			
2. J. W. Parmenter, Gananoque, J. D.	2	0 0			
3. W. Wilson, Kingston, M. D.	1	0 0			

GRAIN CRADLE.

1. Skinner & McCullagh, Brockville, J. D. 0 10 0

DISCRETIONARY.

- John Scott, Sorel, L. C.—*Model Bridges*.
 Chowns & Hamilton, Kingston—*Fan Bellows*.
 Alexander Fleck, Montreal, L. C.—*Two Ploughs*.
 " " " *Two Harrows*.
 C. Clarke, Paris—*Two Thrashers*.
 Charles Joiner, Loughboro', M. D.—*Thrasher*.
 H. Haight, Kingston—*Portable Valise*.
 Charles Joiner, Loughboro', M. D.—*Potato Plough*.
 A. Fleck, Montreal, L. C.—*Drill Plough*.
 Samuel Hurlbert, Prescott—*Drill Plough*.
 A. Fleck, Montreal—*Subsoil Plough; Drill Harrow*.
Arched Harrow, Cheese Press.
 Skinner & McCullagh, Brockville—*Grain Shovel*.
 W. Fairman, Pittsburg—*Fallow Machine*.
 Rapalje & Briggs, Rochester, N. Y.—*Side Hill Plough*.

CLASS K.—PLEASURE CARRIAGE, ONE HORSE.

1. Samuel Hart, Picton, P. E. D. 2 0 0

CARRIAGE, TWO HORSE.

1. Frederick Keller, Ernestown, M. D. 2 0 0
 2. W. H. Gordanier, " 1 10 0

FARM HARNESS.

1. W. Wilkinson, Kingston, M. D. 1 10 0
 2. W. Pierson, Cobourg, N. D. 1 0 0
 3. H. Haight, Kingston, M. D. 0 10 0

PLEASURE HARNESS.

1. W. Pierson, Cobourg, N. D. 1 10 0
 2. Frederick Keller, Fredericksburgh, M. D. 1 0 0
 3. Samuel Hart, Picton, P. E. D. 0 10 0

SADDLE AND BRIDLE.

1. W. Wilkinson, Kingston, M. D. 1 0 0
 2. " " 0 15 0

TRAVELLING TRUNK.

1. H. Haight, Kingston, M. D. 1 10 0
 2. " " 0 10 0
 3. " " 0 5 0

SOLE LEATHER.

1. John Dunn, Toronto, H. D. 0 15 0
 2. " " 0 10 0

CALF SKIN.

1. John Dunn, Toronto, H. D. 0 15 0
 2. " " 0 10 0

FUR CAP.

1. Mr. Merckle, Belleville, V. D. 0 15 0
 2. " " 0 10 0
 3. " " 0 5 0

SLEIGH ROBE.

1. Mr. Merckle, Belleville, V. D. 0 15 0

BOOT MAKERS' WORK.

1. Thomas Thompson, Kingston, M. D. 0 15 0
 2. Samuel Chown, " 0 10 0
 3. Samuel Anglin, " 0 5 0

DISCRETIONARY.

- John Dawson, Kingston, M. D.—*Clothes Measuring Machine*.

CLASS L.—WOOLLEN CARPET, TWELVE YARDS AND OVER.

1. McIntosh & Brush, York, H. D. 2 0 0
 2. W. Gamble, Etobicoke " 1 0 0
 3. N. Fellows, Ernestown, M. D. 0 10 0

WOOLLEN BLANKETS (PAIR).

1. W. Gamble, Etobicoke, H. D. 2 0 0
 2. J. Flanigan " 1 0 0
 3. Mrs. Davy " 0 10 0

COUNTERPANE.

1. Mrs. Gibson 1 0 0

2. Archibald Ramsay 0 15 0
 3. McIntosh & Brush, York, H. D. 0 10 0

FLANNEL, TWELVE YARDS.

1. W. Gamble, Etobicoke, H. D. 1 0 0
 2. " " 0 15 0

SATINETT, TWELVE YARDS.

1. John Dunn, Pittsburg, M. D. 1 0 0
 2. A. Willoughby, Loughboro' 0 15 0

FLANNEL, NOT FACTORY MADE, TEN YARDS.

1. Captain Collaton, Haldimand 0 15 0
 2. John Gilbert 0 10 0
 3. Philip Brewer 0 5 0

FULL CLOTH, NOT FACTORY MADE, TEN YARDS.

1. Mary Hitchcock, Wolfe Island, M. D. 0 15 0
 2. Archibald McMillan, Kingston, M. D. 0 10 0
 3. A. Willoughby 0 5 0

SHAWLS, NOT FACTORY MADE.

1. J. C. Huffman 0 15 0
 2. Samuel D. Purdy, Ernestown, M. D. 0 10 0
 3. H. Huffman 0 5 0

LINEN GOODS.

1. A. N. Briscoe 0 15 0
 2. William W. Miller 0 10 0
 3. Andrew Miller 0 5 0

FLAX, FORTY LBS.

1. Peter Davy, Ernestown, M. D. 0 15 0
 2. " " 0 10 0
 3. " " 0 5 0

LINEN BAGS (TWELVE) MANUFACTURED FROM

CANADIAN FLAX.

1. N. A. Briscoe 1 0 0
 2. P. Davy, Ernestown 0 15 0

DISCRETIONARY.

- W. Gamble, Etobicoke, H. D.—*Horse Blanket, Bear Skin Cloth, Horse Collar Check, Woollen Yarn*.

CLASS M.—CHEESE, NOT LESS THAN 20 LBS.

1. H. Huffman 1 10 0
 2. Ralph Wade, jr., Hope, N. D. 1 0 0
 3. Thomas D. Farley, Sydney, V. D. 0 10 0

BUTTER IN FIRKINS, CROCKS OR TUBS (20 LBS.)

1. John Cowan, Pittsburg, M. D. 1 10 0
 2. John Genge, Kingston Township, M. D. 1 0 0
 3. M. Welburn 0 10 0

MAPLE SUGAR (30 LBS.)

1. Ralph Wade, jr., Hope, N. D. 1 10 0
 2. Rueb. Spooner, Kingston Township, M. D. 1 0 0
 3. R. Dinwoodie, N. D. 0 15 0

CLASS N.—CENTRE TABLE.

1. Drummond & Thompson, Toronto, H. D. 1 0 0
 2. Thomas McDermot 0 15 0

EASY ARM CHAIR.

1. T. O. Butler, Kingston, M. D. 0 10 0
 2. George Bolter, Demorestville, P. E. D. 0 5 0

SOFA.

1. Drummond & Thompson, Toronto, H. D. 3 0 0
 2. T. O. Butler, Kingston, M. D. 1 10 0

DINING ROOM CHAIRS (6).

1. T. O. Butler, Kingston, M. D. 1 5 0
 2. W. Hatch, " 1 0 0

DRAWING ROOM CHAIRS (6).

1. T. O. Butler, Kingston, M. D. 1 5 0
 2. A. Main " 1 0 0

OTTOMAN.

1. A. Main, Kingston, M. D. 1 0 0

WORK BOX.

1. A. Duncan 0 10 0

DRESSING CASE.

1. John Searle, Kingston, M. D. 0 10 0

WRITING DESK.			2. John Hawkins, Wolfe Island		
1. Drummond and Thompson, Toronto, H. D.	0 10 0		3. Jonathan Ferris, Kingston	1 5 0	0 0 0
CLASS O.—APPLES, VARIETY OF.			CANADA COMPANY'S PRIZE FALL WHEAT.		
1. Thos. Kirkpatrick, Kingston M. D.	0 15 0		1. James Lafferty, West Flamboro, G. D.	25 0 0	
2. Reuben Spooner, Kingston Tp., M.D.	0 10 0		BARLEY.		
APPLES, TABLE (12).			1. Capt. Shaw, Toronto, H. D.	0 15 0	
1. R. Jackson, Kingston, M. D.	0 10 0		2. P. Davy, Bath, M. D.	0 10 0	
2. Charles Vernon	0 7 6		SPRING RYE.		
3. Thos. Kirkpatrick, Kingston, M.D.	0 5 0		1. Capt. Shaw, Toronto, H. D.	1 0 0	
APPLES, WINTER (12).			OATS.		
1. R. Jackson, Kingston, M.D.	0 10 0		1. Thomas Richmond, Gananoque, J. D.	0 10 0	
2. Henry Turner, Toronto, H. D.	0 7 6		2. P. Davy, Bath, M. D.	0 5 0	
3. Mr. Fleming, "	0 5 0		PEAS.		
PEARS, TABLE (12).			1. Mr. Wellburn, Kingston	0 10 0	
1. None awarded.			2. Capt. Shaw, Toronto, H. D.	0 5 0	
2. Mr. Fleming, Toronto	0 7 6		INDIAN CORN.		
3. T. Stinson, Picton, Prince Edward D.	0 5 0		1. N. A. Briscoe, Ernestown	0 10 0	
PEARS, WINTER (12).			TIMOTHY SEED.		
1. Hon. R. Baldwin, Toronto, H. D.	0 10 0		1. Rob. Collins, Camden, M. D.	0 15 0	
2. The Baron de Longueil, Kingston, M. D.	0 7 6		2. Mr. Millroy, "	0 10 0	
GRAPES.			CLOVER SEED.		
1. Henry Turner, Toronto, H. D.	0 10 0		1. Mr. C. Davy, Ernestown	1 0 0	
2. William Thompson, Nepean, D. D.	0 7 6		2. J. C. Davy, "	0 15 0	
3. Henry Turner, Toronto, H. D.	0 5 0		FLAX SEED.		
BROCOLI (4 HEADS).			1. Capt. Shaw, Toronto, H. D.	0 10 0	
1. Henry Turner, Toronto, H. D.	0 10 0		2. John Ferris, Kingston, M. D.	0 5 0	
CAULIFLOWER (4 HEADS).			HOPS.		
1. Henry Turner, Toronto, H. D.	0 10 0		1. T. Nightingale, Toronto, H. D.	2 10 0	
2. " " "	0 5 0		2. Joseph Scott, Augusta, J. D.	1 10 0	
CABBAGE (4 HEADS).			POTATOES.		
1. Henry Turner, Toronto, H. D.	0 10 0		1. Robt. Collins, Camden	0 10 0	
2. " " "	0 5 0		2. S. Washburn, Picton, P. E. D.	0 7 6	
CARROTS (12 FOR TABLE).			SWEDISH TURNIPS.		
1. Rev. W. Allen, Wolfe Island, M.D.	0 10 0		1. George Stanton, St. George, G. D.	0 10 0	
2. H. Sherwood, Toronto, H. D.	0 5 0		2. Charles Young, Camden, M. D.	0 7 6	
WHITE CELERY.			FIELD CARROTS.		
1. Mr. Fleming, Toronto, H. D.	0 10 0		1. Gardener of the Baroness de Longueil,		
RED CELERY.			Kingston, M. D.	0 10 0	
1. Mr. Fleming, Toronto, H. D.	0 10 0		2. Rev. Mr. Allen, Wolfe Island	0 7 6	
EGG PLANTS.			MANGEL WURTZEL.		
1. Mr. Fleming, Toronto, H. D.	0 10 0		1. John Bush, Wolfe Island	0 10 0	
2. " " "	0 5 0		2. Charles Young, Camden	0 7 6	
BLOOD BEETS.			SUGAR BEET.		
1. Gardener of the Baroness de Longueil,			1. Gardener of the Baroness de Longueil,		
Kingston, M. D.	0 10 0		Kingston, M. D.	0 10 0	
2. Mr. Fleming, Toronto, H. D.	0 5 0		2. Rev. J. Allen, Wolfe Island	0 7 6	
WHITE ONIONS.			PARSNIPS.		
1. Mr. Fleming, Toronto, H. D.	0 10 0		1. Gardener of the Baroness de Longueil,		
2. Gardener of the Baroness de Longueil,			Kingston, M. D.	0 10 0	
Kingston, M. D.	0 5 0		2. Henry Sherwood, Toronto	0 7 6	
YELLOW ONIONS.			W. Daniel, " (Dis.)		
1. H. Sherwood, Toronto, H. D.	0 10 0		DISCRETIONARY.		
2. Wm. Daniel "	0 5 0		Ellwanger & Barry, Rochester—Variety of Fruits.		
RED ONIONS.			W. March, Scarborough—Coffee.		
1. H. Sherwood, Toronto, H. D.	0 10 0		Sam. D. Clark, Camden—Madder.		
2. H. Turner "	0 5 0		Capt. Shaw, Toronto—Pumpkins.		
SALSIFY.			Wm. Gordon, Toronto—Squash.		
1. Captain Shaw, Toronto, H. D.	0 10 0		H. Sherwood, Toronto—Peaches.		
2. " " "	0 5 0		R. Baldwin, Toronto—Peaches.		
WHITE BEANS.			J. Wadsworth, Kingston—Melons.		
1. Mr. Glassford, Glenburnie	0 10 0		R. Jackson, "		
2. John Gilbert, Cobourg	0 5 0		E. A. Harper "		
WINTER WHEAT.			S. D. Taylor, Camden—Jerusalem Cherry.		
1. J. Lafferty, West Flamboro', G. D.	2 0 0		Wm. Gordon, Toronto—Tomatoes.		
2. Paul Clapp, Hillier, P. E. D.	1 5 0		J. Wadsworth, Kingston—Tomatoes.		
3. C. Hinds, Haldimand	1 0 0		" " "		
SPRING WHEAT.			Peppers.		
1. R. M. Huffman, Ernestown	2 0 0		H. Sherwood, Toronto—Nectarines.		

CLASS P.

COOKING STOVES.

1. G. B. Spencer, Toronto 1 0 0
 2. Chowns and Hamilton, Kingston 0 10 0

PARLOUR STOVE.

1. Chowns & Hamilton, Kingston 1 0 0

BALANCE SCALES.

1. B. Spencer, Toronto 1 0 0
 2. " " 0 15 0
 3. M. Parsee, Cobourg 0 5 0

HOT AIR APPARATUS.

1. G. B. Spencer, Toronto 1 10 0

BENCH PLANES.

1. Wallis & Son, Montreal 0 15 0

CORN BROOMS.

1. M. Rose, Kingston 0 7 6
 2. " " 0 5 0
 3. P. Davy, Bath 0 5 0

WOODEN PAIL.

1. J. Rooklidge 0 5 0
 2. " " 0 3 9

WASH TUBS.

2. Thomas Funnell, Kingston, M. D. 0 7 6

HAMES.

1. Male & Toogood, Haldimand, N. D. 0 10 0
 2. Skinner & McCullagh, Brockville 0 5 0

SADDLE-TREE.

1. Skinner & McCullagh, Brockville 0 10 0
 2. " " " 0 5 0

BOARD RULE.

1. S. Clinch, Cobourg, N. D. 0 10 0
 2. " " 0 5 0

SPINNING WHEEL.

1. Isaac Lake, Ernestown 0 10 0

CHURN.

1. Thomas Funnell, Kingston 0 10 0
 2. The Baroness de Longueil, Wolfe Island. 0 5 0

EARTH AUGER.

1. Charles Vale, Toronto 0 10 0

RIFLE.

1. Angus McLeod (manufactured by Thomas Costen), Montreal 0 15 0

DISCRETIONARY.

- H. Stone, Kingston—Glue.

CLASS Q.—LADIES' DEPARTMENT.

WOOLLEN OR COTTON NETTING.

1. Mrs. H. Macdonald, Kingston 0 15 0
 2. " " 0 10 0

WOOLLEN OR COTTON KNITTING.

1. Miss S. J. Gilbert, Cobourg 0 15 0
 2. Mrs. Sharpe, Yonge Street, H. D. 0 10 0

EMBROIDERY.

1. Margaret Robb, Kingston 1 0 0
 2. Sarah McQueeny, " 0 15 0

RAISED WORSTED WORK.

1. Miss E. Clench, Cobourg 1 0 0
 2. Mrs. F. Harper, Kingston 0 15 0

WORSTED WORK.

1. Miss Clay, Nelson, G. D. 0 15 0
 2. W. P. Wilson, Kingston 0 10 0

DISCRETIONARY.

1. Miss Thibodo, Kingston.

CROCHET WORK.

1. Miss Gornall, Kingston.
 2. Mrs. Forbes, Spring Grove, M. D.

WAX FLOWERS.

1. Miss C. Currie, Niagara 0 15 0
 2. Miss Clench, Cobourg 0 10 0

WOOLLEN SOCKS.

1. Mrs. Brewer, Kingston, M. D. 0 10 0
 2. William Tubbs, Picton, P. E. D. 0 5 0

WOOLLEN STOCKINGS.

1. T. Stinson, Picton 0 10 0
 2. William Tubbs, Picton 0 5 0

WOOLLEN MITTS.

1. William Tubbs, Picton 0 10 0
 2. Samuel D. Purdy, Earnestown 0 5 0

WOOLLEN GLOVES.

1. Mrs. Welburne, Kingston 0 10 0

GENTLEMEN'S SHIRTS.

1. Mrs. Mulligan, Kingston. 0 15 0
 2. " " 0 10 0
 3. William Tubbs, Picton, P. E. D. 0 5 0

QUILTS.

1. Miss Ann Skinner, Kingston 1 5 0
 2. Samuel D. Taylor, Camden 1 0 0
 3. Margaret Robbs, Kingston 0 15 0

CLASS R.

FINE ARTS.—OIL PAINTING—LANDSCAPE.

1. Miss Clench, Cobourg 2 10 0
 2. J. Gillespie, Toronto 1 10 0

WATER COLOURS—PORTRAIT.

1. Mrs. Hurlburt, Toronto 2 0 0
 2. " " 1 5 0

WATER COLOURS—FIGURED.

1. Miss Clench, Cobourg 2 0 0

WATER COLOURS—LANDSCAPE.

1. Mr. Bull, Toronto 2 0 0
 2. " " 1 5 0

CRAYON PORTRAIT.

1. S. Fleming, Toronto 2 10 0
 2. Mrs. McGibbon, Kingston 1 10 0

CRAYON FIGURE.

1. John Wilkie, Toronto 2 0 0
 2. Mr. Bull, " 1 5 0

CRAYON LANDSCAPE.

1. Mr. Bull, Toronto 2 0 0

PENCIL PORTRAIT.

1. Mr. Bull, Toronto 2 0 0

PENCIL FIGURE.

1. Mr. Bull, Toronto 2 0 0
 2. John Wetenhall, Nelson, G. D. 1 5 0

WOOD ENGRAVING.

1. John Allanson, Toronto 2 0 0

STUFFED BIRDS.

- R. Perkins, sergeant 20th Regiment, Kingston 1 0 0

STAINED GLASS.

1. Mr. Bull, Toronto 1 0 0

DISCRETIONARY.

- William Smith, Kingston—1 Clock.
 S. Stacey, Toronto—Penmanship.
 J. Ramage, Kingston—Silver Work.
 Messrs. Willard & Houlay, Syracuse—Silver Work.
 Benedict & Barney, Syracuse—Gold Pens.
 S. Fleming, Toronto—Design for Diploma.
 Norton & Seymour, Syracuse—Silver Work.
 D. Macdonell, Buffalo—Daguerreotype.
 Mr. Morrison, Toronto—Silver Work.

CLASS S.

POTTERY—BEST SPECIMEN.

1. Jonathan Peel, Brockville 0 15 0
 2. " " 0 10 0

DRAINING TILL.

1. John Wade, Hope, N. D. 0 15 0

CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. v. 9.

GEORGE BUCKLAND, }
WILLIAM McDUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, NOVEMBER 1, 1849.

No. 11.

NOTICE TO SUBSCRIBERS.

THE first volume of the *Agriculturist* being nearly completed, the Proprietors desire to address a few words to their Subscribers and the Public. For the support and literary assistance with which they have been favoured, they avail themselves of the present opportunity to render their grateful acknowledgments, and to express a hope that the same may be continued through another year. As the utility and profit of a paper of this character must mainly depend upon the extent of its circulation, and it being the wish of the proprietors to make this journal an efficient medium of communication between the districts of Upper Canada, on all subjects relative to agriculture, gardening, and the useful and domestic arts, they have determined on reducing the price, to Clubs and Agricultural Societies ordering 25 Copies, directed to one address, to HALF A DOLLAR PER ANNUM. This offer is made distinctly on the condition that a sufficient number of Subscribers shall be obtained, to guarantee the proprietors from a direct pecuniary loss. If the number should fall short of that point, the alternative will be adopted of reducing the size to 24 pages. To this the proprietors would be sorry to resort, since original matter, connected with and illustrative of the agricultural, manufacturing, and other industrial interests of the Province, is likely to increase in their hands, and therefore, instead of dimi-

nishing, they would rather increase the size of the publication. It is intended to make a proposal to the Directors of the Provincial Association, at their meeting in February next, to insert their reports and transactions; and it is believed that, if this enterprise is supported by the country, as its importance and utility appear to deserve, the *Agriculturist* may be placed in a position both remunerating and permanent, at the reduced price above proposed. No travelling agents will be employed, as the proprietors have found that such a system, with a paper so cheap as the *Agriculturist*, is certain to entail a pecuniary loss.

TERMS.

Single Subscribers.....	5s. per annum.
12 copies, each	3s. 9d. "
25 and upwards, each	2s. 6d. "

Present subscribers will have to renew their subscriptions, as no numbers of the new volume will be supplied, either without order or *pre-payment*. Agricultural Societies will be expected to pay on the receipt of their usual funds. It is urgently requested that those who intend patronizing the paper will inform us, by the middle of December, what number of copies they will take, that we may be able to determine, before going to press, the edition required.

Toronto, November 3, 1849.

**ADELAIDE ACADEMY,
FOR THE EDUCATION OF YOUNG LADIES.**
No. 28, Bay Street,
TORONTO.

THE next Term of Adelaide Academy will commence on the 17th November, with Lectures on Chemistry and Astronomy.

Pupils are received at any time during the year, except from the 1st of July to the 24th of August.

Competent and experienced teachers are engaged to give instruction in all the solid branches of an English Education, in Instrumental and Vocal Music, Drawing, Painting in Water Colours, Oil Painting, Miniature Painting, &c.

Lectures will be given to the classes in Natural Philosophy, Chemistry, Astronomy, Physiology, and Biblical History.

The Academy is divided into four departments, with experienced Teachers over each.

Board	£0 10 0	per Week.
Tuition in English Studies.....	1 0 0	" Qr.
Board & Tuition in English Studies 26 0 0	" Ann.	

Pupils attend the Church which their Parents or Guardians direct.

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The Honourable The Chief Justice,
The Honourable Robert Baldwin.
The Honourable J. H. Price.
Henry Ruttan, Esq., Sheriff N. D.
W. B. Jarvis, Esq., Sheriff H. D.
W. S. Conger, Esq., Sheriff C. D.
Rev. Dr. Richey, Rev. E. Wood, Superintendent of Missions; Rev. H. Esson, A. M., Professor in Knox's College; and to numerous Patrons throughout the country.

☞ Cards, giving particulars, can be obtained at this office, or at the Academy.

J. HURLBURT, A. M., *Principal.*

Toronto, 1st November, 1849.

**GENESEE
MUTUAL INSURANCE COMPANY,
CAPITAL, 800,000 DOLLARS.**

THIS well-known Insurance Company, having extended its business into this Province during the last year, has appointed Mr. McDUGALL, one of the Editors of the "Agriculturist," Agent for Toronto and Vicinity.

The Company is established on the soundest and most approved principles; as the success which has attended its operations, since its establishment, thirteen years ago, fully proves. Very hazardous risks are not taken; and the Company will not insure in one risk more than £1,250, nor more than £1,500 upon property so situated as to be exposed to destruction by one fire. No insurance will be taken to a greater amount than two-thirds the value of the property. These, with other precautions strictly observed, have made this one of the *cheapest and safest* Companies to be found.

The high character which the Company has obtained for honourable dealing and promptitude in settling losses, renders it worthy the notice of all Canadian Insurers.

☞ Agency for Toronto, &c., at the Office of the "Agriculturist," South-west Corner of King and Yonge Streets.

Toronto, April 1849

**ROSEBANK NURSERIES,
NEAR AMHERSTBURGH, CANADA WEST.**

THE Proprietor has for sale a most extensive assortment of all the best varieties of FRUIT TREES, Vines, Ornamental Trees, Shrubs, and Plants, Roses, Tulips, Hyacinths, &c. &c., which he will dispose of at very reduced rates, as low or lower than they can be procured any where else.

The Trees are well grown and exceedingly thrifty. The stock comprises a greater number of varieties than can be found in any other Nursery in Canada of Apples, Pears, Peaches, Plums, Cherries, Apricots, Nectarines, Grapes, Quinces, Gooseberries, Raspberries, Strawberries, Currants, Mulberries, &c. &c.

Catalogues will be sent to all post paid applicants, and the trees will be carefully packed, and forwarded to any part of the Province, with despatch, by the *Propeller Cathcart*, or otherwise, as may be directed.

Persons unacquainted with fruits would be better supplied by leaving the selection of varieties to the subscriber, mentioning the number of Summer, Autumn, and Winter varieties required, or any other instructions they may think requisite. Orders should be sent early, so as to allow of a good selection, and also that they may be forwarded by the first conveyance.

JAMES DOUGALL, *Proprietor.*

Rosebank, near Amherstburgh,
1st September, 1849.

PROSPECTUS

OF A

WORK ON EDUCATION;

OR

An Address to the Mothers of Canada on the Education of their Daughters,

BY MRS. HURLBURT,

PRECEPTRESS OF ADELAIDE ACADEMY.

THIS work treats of the moral, religious, intellectual and physical training of Girls; dwells particularly upon the nature and great importance of an early religious education; the practical duties of Christians in the family circle, in social and public life; the prevailing systems of education, their excellences and defects; the choice of teachers, their religious and moral character; the subjects of study of most importance for Girls; their early associates, prevailing amusements; reading, choice of books, pernicious effects of novel reading; duties of mothers, duties of daughters; domestic or fireside education, private schools, public seminaries; examples of pious and distinguished women.

Nearly one-third of the work is devoted to the religious education of Girls, showing its influence upon the happiness and prosperity of families and communities. The author believing that this part of education is too much neglected, where it can most efficiently be attended to—at the fireside—has been induced to extend her remarks upon this part of the subject.

This work will contain about 200 pages 12mo, and will be delivered to subscribers at the low price of 2s. 6d. per volume.

Toronto, 8th March, 1849.

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JOHN M. ROSS,

A GENT for Hall's Patent Moulding and Pressing Machine: also, for the Genesee Agricultural Seed and Implement Warehouse, Rochester, N. Y.
City Wharf, Church Street, Toronto:
20th March, 1849.

T H E CANADIAN AGRICULTURIST.

Vol. I.

TORONTO, NOVEMBER 1, 1849.

No. 11.

ADDRESS OF H. RUTTAN, Esq.

PRESIDENT OF THE AGRICULTURAL ASSOCIATION OF
UPPER CANADA,

Delivered at Kingston, Sept. 20, 1849.

GENTLEMEN,—It has become a custom (copying after the usage in similar institutions in Europe and the United States) to exact from the president of the association, an address, to be formally delivered at our annual meeting.

In fulfilling this duty to-day, it is not my intention to inflict upon you a long dissertation upon the science of agriculture, much less to discuss the abstruse subject of chemistry as applicable to this important art. Indeed had I the temerity, surrounded as I am by such an array of talent and erudition to grapple with these subjects, I should consider their discussion by me as out of place upon an occasion like the present. A few practical and very general remarks are all that can be expected at such a time.

My intention, therefore, is merely to take a glance at a few prominent and general features of the state of the crops for the present year, so far as I have been enabled to judge of them, and to make some suggestions as to the feasibility of varying and extending our farm productions. I shall also revert to a few incidents in the early settlement of the country—especially as they bear upon the state of agriculture from that period down to the present time—and of the prospects which are before us in our efforts for the future; and if I cannot find matter for much congratulation in the farming history of the province for the last twenty or thirty years, I hope I shall not give offence in honestly saying so—not be deemed presumptuous in attempting to point out a course for the future, through which alone, in my own opinion, we can attain a state of prosperity, wealth and contentment. I shall also, I trust, be excused for adapting my remarks more especially to the farmers in the immediate neighbourhood of whom this exhibition is held.

So far as I have been enabled to learn, the wheat crop has, during this season, been rather over than under the average of the last five years. Most kinds of spring grain, as also hay, have evidently fallen short of an average crop—especially on the heavy clays around the bay of Quinte—and a scarcity may be depended upon.

Indian corn, which I consider as standing next to wheat in point of importance, I am happy to see, is, after a lapse of more than twenty years, again coming into general cultivation; and I hope that,

by the blessing of Providence in ordering the seasons, whose alternations have so long deprived us of this valuable plant, we shall again see surrounding our barn-yards and out-houses, the old-fashioned corn crib. Peas, rye and buckwheat, are not so generally grown as they formerly were, but oats have steadily increased in quantity, and so also has barley. The regular growing of turnips upon old land dates from the first general immigration of old-country people, about twenty-five years ago, and I am happy to see the cultivation of this valuable esculent becoming general amongst my own countrymen. The potato blight, which has caused so much distress in some portions of Europe, and has, more or less, affected every country where the growth of that root was known, has, we have reason to hope, exhibited symptoms of giving way, and this valuable root will once more fill the blank in our farm productions which it was wont to do. Our pork and beef are a better article than formerly, but it appears to me that there is not the quantity in proportion to our cleared land that there was. I attribute the falling-off in these articles, and in peas, to the decline of the lumbering business, which, except perhaps up the Ottawa and its tributaries, and the river Trent, is becoming unprofitable. From the year 1800 until about 1840, this business created and steadily maintained a ready cash market for those indispensable items of a lumberman's breakfast, dinner and supper; one proof amongst many, of the advantage of a home market for our produce. Rye is nearly out of cultivation in the upper part of the Province, and by the time that Father Matthew shall have gone his rounds will, I suppose, have received its final blow so far as regards its cultivation for whiskey; but as our old fields become exhausted this valuable grain must necessarily supply the place of wheat for food; for which purpose indeed it is no doubt a more healthy article. As it respects barley and oats, the quantity grown has steadily kept pace—the one with the immigration of old country people—the other with the increase of horses. The manufacture of pot-ashes and lumber, depending altogether upon the unbroken forests for their production, must, with those forests, recede and finally become annihilated; so that two out of the three staple productions of the Province can no longer, I think, be reckoned upon as sources of wealth to the country.

Butter and cheese have hitherto never received that general attention which both their importance, as well as the markets, have demanded. One

reason for this is, that in the absence of all manufactures, the consumption has not kept pace with the production, and they would not perhaps, hitherto, bear exportation. The wonderful revolution in production of the finer fabrics which constitute our wearing apparel, which has of late years taken place throughout the world, by means of cotton and the spinning-jenny, has all but annihilated the growth of flax, and has also seriously affected that of hemp.

Down to this time it is only to the staple productions that we have paid much attention. These staples have hitherto been—wheat, pork, lumber and pot-ashes. All the other productions of our soil have only occasionally and incidentally received attention, and could never hitherto be reckoned and depended upon as productions to offset against our importation of foreign goods; and in this lies the secret of our commercial embarrassment. If, then, we strike out of this already small catalogue—pork, lumber and pot-ashes, the former depending for demand upon the last two, and these again diminishing daily with the clearing up of our wild lands, we have but one left—*wheat*. And then, if we pursue this idea and reflect, that what with the lessening of the demand for home consumption by means of the decline in the manufacturing of lumber and pot-ashes, and the loss of protection in the English market, this our only staple article is reduced 20 per cent. in value, we may, without much difficulty, fix upon the value of our future prospects! And yet, in the face of these incontrovertible facts, we hear people wondering how it is that our commercial matters have got into so rickety a condition—that our wholesale merchants are so largely indebted to the European manufacturer, our shop keepers to the wholesale merchants, and the farmers to the shop keepers.

That the country is enormously in debt we have every day the most irrefragable evidence—no man can shut his eyes to the fact. I estimate the mercantile indebtedness to be equal at least to that of the public debt—upwards of five millions of pounds! I do not mean to say, that the farmers alone owe this sum, but I mean to say, that this 20,000,000 of dollars has all to be dug out of the ground by the farmers, with the exception of that part which the remnant of our lumbering and pot-ash establishments may yet meet—both of which are at present dwindling away, and will shortly become wholly insignificant. At least four-fifths of this sum are owing by the people of Upper Canada, and must be dug out of the ground by about two hundred and fifty thousand pairs of hands! Oh! for a few months in California! Not so, gentlemen, take my word for it, we will dig this out of our own mine much more easily than out of those of California. I repeat, that the whole of the amount for the payment of this debt must come out of the ground—it must be *CREATED*. Political economists, I know, differ somewhat on this point, but the difference consists in words merely. They do not understand each other. It is of great importance that every man who gets his living by the production of *food*, should never lose sight of this great and important distinction between his

occupation and that of all other classes of the community—that he alone *CREATES*, and all the rest of the world *ANNIHILATES*. I shall not stop here to enter into a metaphysical discussion of this subject, but without an explanation of what I mean by this word “creation,” as applied to the growers of food, I should not be sufficiently understood, and this explanation cannot better be given than in the following quotation of an experiment lately made.

Two hundred pounds of earth were dried in an oven, and afterwards put into an earthenware vessel; the earth was then moistened with rain water, and a willow tree weighing five pounds was placed therein. Care was taken to prevent the addition of fresh earth. After growing for five years, the tree was removed, and found to weigh one hundred and sixty-nine pounds three ounces. The earth was then removed from the vessel, again dried in the oven, and afterwards weighed; it was discovered to have lost only about two ounces of its original weight; thus, one hundred and sixty-four pounds of lignin or woody fibre, bark, roots, &c., were certainly produced—but from what source? This is what I mean by creation—and this is what the farmer does in the growth of all his crops. In an acre of wheat which will yield 45 bushels, he creates four tons out of the single bushel of wheat, weighing about 60 lbs., which he sowed! It is only by this operation that debts, strictly speaking, can ever be really discharged. This produce may, indeed, for the time being, be represented by bits of metal or bits of paper, but these representatives are a mere guarantee that this food shall be created and be forthcoming.

I have dwelt upon this, because, if we may judge from the actions of men, the farmer does not know the importance of the position which he holds amongst his fellow men; nor is the non-producing part of the community, which constitutes fully one-half of the population in this country, aware, it appears to me, of the extent of its obligation to the farmer.

To pay this enormous sum we must export 16,000,000 bushels of wheat, supposing we realise five shillings per bushel. Now, I do not think, that of Canadian wheat we have ever shipped from our sea ports much exceeding 3,000,000 bushels in any one year. So that five or six years must elapse before this debt would be paid, supposing we imported no more goods, and exported on an average not less than this quantity of wheat.

Do not let me be misunderstood here. In making these estimates, I do not pretend that they are based upon any certain data—they must necessarily be mere approximations; my principal drift is, to set before you some tangible matter for your serious consideration; because that our present position will require the serious consideration, and not only so, but the prompt and energetic *action* of the farmers of Canada; none but those who, having eyes and see not, ears and hear not, or hands and work not, can for a moment doubt or gainsay. Nor let me be censured for thus exposing our real situation to the world—to strangers, and many of those strangers foreigners perhaps.

The time has come in which it will no longer do to put off the evil day. The sooner we look our difficulties in the face, the sooner we shall be prepared manfully to meet them. Our debts must be paid, both public and private, and the one depends very much upon the other. Canadians must never *repudiate*. This is not a characteristic of any country under British rule. "Monarchy is honour," and we must not be the first to give the lie to this patriotic sentiment. The reason why several of the United States have refused to pay their public debts is not because they want the means—if it were, there would be some excuse, but it is because their public men in these States are dishonest, and do not tell the people the truth. It is, indeed, sometimes a most disagreeable duty, but he who shrinks from its performance is not fit to be placed in a responsible position. I perform this duty the less reluctantly to-day, standing as I am at this moment in the midst of those amongst whom I was born, and to whom I owe a large debt of gratitude, which, most probably, I shall never have another opportunity of discharging.

In 1815, at the close of the late war with the United States, our debts, both public and private, were, I may say, wiped out; the high prices which we obtained for our produce put us in fact "in funds," so that we are now at the winding-up place of about a period of 34 years. On an average, our commercial debt has increased from £100,000 to £150,000 a year, that is to say, we have imported to the amount of that sum more than we have exported—in other words, we have been living £150,000 a year above our means. In addition to the principal of our debt we have a tax to pay, in the shape of interest, equal to about £300,000 a year. Now, notwithstanding there are persons who will maintain that the payment of interest is no drawback upon the prosperity of a country, yet I am so old-fashioned as to think otherwise, and to denounce such doctrine as a most mischievous fallacy.

Upper Canada has been settled little more than sixty years; for the first half of this period we were *not* in debt, and if we look closely into the course we have pursued, we will find reasons for our change in circumstances. The man who finds himself in a labyrinth knows, that unless he can find his back-track—the exact road by which he got entangled, he can never expect to make his escape. So, in order to get rich, we must first find out how we became poor. I must, therefore, ask you to follow me in a short digression in adverting to the early history of the country—I mean the Upper Province.

I am myself one of the eldest born of this country, after its settlement by the loyalists, and well remember the time when, as Bishop Berkely observes, a man might be the owner of ten thousand acres of land in America and want sufficient means to buy himself a breakfast! One-half of the land on the Bay of Quinte, the garden of Canada, could, within my remembrance, have been purchased for £5 a two hundred acre lot, and many a one has been sold for a *half Joe*. All this cannot be matter of wonder, when I tell

you that a great scarcity of provisions prevailed for two or three years consecutively, in consequence of failures in the crops, and what brought on the famine, or "scarce year," (about the year 1790, if I am not mistaken) was the almost entire destruction of the deer by the wolves for two consecutive years. The snow lay upon the ground from December until April, at the depth of four to five feet. In the month of February of the last of these years, a near relative of mine sent all the way to Albany in the State of New York, a distance of more than 200 miles, for four bushels of Indian corn! And this was brought all that distance by two men on snow shoes! It took them about eight weeks to accomplish this journey, and during this time about one-third of the quantity was necessarily consumed by the men; the residue of this precious cargo—pounded up in a mortar made of a maple stump, with the winter-green berry and mucilaginous roots, latterly boiled with a little milk—constituted the principal food for two families, consisting of seven souls, for the space of four or five months! It was remarked, I have heard some of the oldest of the settlers assert, that the usual supply of fish even had failed. The few cattle and horses which the settlers, at great cost and trouble, had collected, were killed for food. The faithful dog was, in several instances, sacrificed to supply that food which he had so often been the means of furnishing to his then kind, but now starving master. The famine this year was general throughout the Bay of Quinte; and such was the distress that, during this winter, several persons died from starvation. In the Hay-Bay settlement, one of the most heart-rending occurrences took place. Some time during the month of April, the husband and father was found buried in the snow, which lay upon the ground at an average depth of five feet, whilst within the shanty was exhibited the awful spectacle of the dying mother pressing to her bosom her dead infant, still in the position of attempting to gain that sustenance which its mother had for some time been unable any longer to afford it!

Here then was a state which one would think might appal the stoutest heart, and might, without subjecting this little band of heroes to the charge of a want of affection for the crown, have driven the remnant of them to seek, at the very earliest opportunity, an asylum from death, even amongst their implacable and cruel enemies. This it was in their power to have done the following year. Did they do so? No! These exiles—these emaciated and worn-out loyalists—preferred death, even though it came in the ghastly form of famine, to the fraternization with rebels to their king. Loyalty, with our forefathers, consisted of something more than a name. They did not stop even to weigh their *lives* with the crime of treason, much less did they calculate upon pecuniary advantages. Whilst the rebels had added robbery and murder to the crime of treason, these faithful and devoted subjects of the crown, although suffering in body, could lie down in their bark-covered shanties and upon their beds of straw and boughs, with a conscience void of

offence, and in the enjoyment of that peace and tranquility, which was a result of the performance of their duty—no less to God than to their King; whilst the traitors to their sovereign were revelling in the possession of the small properties from which they had been driven, but which must have been ashes in the mouths, and bitterness in the throats of these unhallowed fratricides.

The traitor to his Sovereign, at all times, no doubt, makes every effort to reconcile his conduct with his duty, and must, in self-defence, seek out reasons for justification; but alas! how weak must be all reflections against the cries of a justly alarmed conscience, which can never be quieted either by flattery or false arguments.

Providence now, about the year 1791, and about seven years after their first settlement, began to smile upon the arrangements of this small band of heroes. The winters began to assume a somewhat milder aspect—the wolves in their turn became a prey to the famine which by their own devastation amongst the deer, they had caused. The Indians who, about this time began to be very troublesome—keeping the settlers in a constant state of alarm and at every opportunity carrying off their cattle, were, either through some new treaty or otherwise, so propitiated by the government, that the settlers from this time began gradually to increase, though for some years but slowly, and generally to improve in their circumstances.

The social history of the old united empire loyalists of the Bay of Quinte, from their embarkation at New York in 1783, down to about the year 1820, when their *political* history commences, and which was the death knell to the state of real happiness and enjoyment upon which they were just entering, would form a curious as well as interesting episode in the history of Canada; but as I have already perhaps somewhat exceeded my licence upon the present occasion and trespassed upon your attention, I will pass on to those matters which more immediately concerned their agriculture.

Amongst the many liberal provisions, besides their allotments of land, which were made by that paternal Monarch Geo. III. of imperishable memory, to the U. E. Loyalists, I well recollect the old English plough. It consisted of a small iron socket whose point entered by means of a dove-tailed aperture, into the heel of the coulter which formed the principal part of the plough, and was in shape similar to the letter L, the shank of which went through the wooden beam, and the foot formed the point which was sharpened for operation. One handle and a plank split from the side of a winding block of timber, which did duty for a mould-board, completed the implement. Besides provisions for a year, I think each family had issued to them a plough share and coulter, a sett of drag-teeth, a log chain, an axe, a saw, a hammer, a bill-hook and a grabbing hoe, a pair of hand irons, and a cross-cut saw amongst several families, and a few other articles.

The trace ropes, leading lines, halters, bed-cords, &c., when they had arrived at that state of luxury which required bed-cords—were manufactured from the bark of the elm and basswood trees,

which was peeled off in the spring of the year and water-rotted similar to flax, in order to separate the fibre from the rind. This material when properly prepared forms a strong, useful and cheap rope, and might at this day be manufactured and used with advantage, for most domestic and farm purposes. Many a day I recollect having assisted my father in his rustic rope-walk. The clevises and clevis pins as well as the drag teeth, when the old ones were worn out or lost, were frequently made of the hickory timber which, when I was a boy, abounded about the Bay of Quinte.

About the year 1808, the “hog-plough” made its appearance. This was an importation, and about the first from the United States. This plough was considered a wonderful invention. It consisted of a full iron share forming the front or rising part of the mould-board, the residue of which was still obliged to be made of wood. About the year 1815 the farmers generally fixed their attention upon the cast-iron share and mould-board, all cast in one piece, also an invention from the United States, but which we then began to manufacture ourselves, and it was indeed the first implement of any consequence to farmers, which we did manufacture within the Province.

From that time to the present, not a single year has passed over without an “improvement” in this important implement, until we have now a host of ploughs, harrows, cultivators, drills, potato diggers, scarifiers, clod crushers, rollers, cradling and mowing machines, hay-rakes and corn shellers, threshers, and a host of inventions—vying with each other in the rapidity with which they are varied in form, shape, colour and character, to such a degree that they have almost become a nuisance to the farmer who desires to purchase a really useful article.

During all this period from 1783, with the exception of the “scarce years” the people lived happily and contentedly. Here and there a school would be started, to which the young men in winter would travel upon snow shoes for several miles. One winter’s schooling was considered quite sufficient, and if a lad did not learn to write upon half a quire of paper including his pot-hooks and hangers, he was considered a dunce.

As it respected religion, the loyalists were all Protestants; of the descendants of the old Huguenot families who had originally colonised a considerable part of the Province of New Jersey, of which class were all my own immediate relations as well as a great number of the other loyalists—most of them were brought up in the faith of the Church of England. There were a few of the descendants from the Puritan stock, and a few who had been brought up under the teaching of Wesley and Whitfield. Old Dr. Stuart, the father of our venerable and much beloved Arch Deacon of Kingston, settled in this City which was then a little French village called Cataroque, and taking advantage of his missionary labours amongst the Mohawks of the Bay of Quinte, he instructed the inhabitants generally in the mode of husbandry, with which he had been familiar on the Mohawk River in the Province of New York. The itinerant system of Methodism, however, very soon brought the great

bulk of the settlers into that form of worship ; and the labours of the early Methodist missionaries produced fruits throughout the Province, but especially on the Bay of Quinte, which are to this day manifest in the orderly walk and character of the people.

As it regards our mode of living, our food was coarse but wholesome. With the exception of three or four pounds of green tea a-year for a family, which cost three bushels of wheat per pound, we raised every thing we ate. We manufactured our own clothes, and purchased nothing except now and then a black silk handkerchief or some trifling article of foreign manufacture of the kind. We lived simply, yet comfortably—envied no one, for no one was better off than his neighbour. Until within the last thirty years, one hundred bushels of wheat, at 2s. 6d. per bushel, was quite sufficient to give in exchange for all the articles of foreign manufacture consumed by a large family. We had no money except the old-fashioned Joe and Spanish milled dollar; we needed none. We were not rich, but we were emphatically a prosperous people; perfect contentment reigned throughout the land.

But now came pride. History is full of instruction as to the evils always attendant upon the introduction of wealth and pride into a poor country. After the late war, great numbers of the officers and other old-country gentlemen remained here. These having been accustomed to live like gentlemen in the old country, very naturally continued their old habits and customs in Canada; and making purchases and dispersing themselves throughout the various districts, the whole population has from that time to the present imbibed a propensity to extravagance in living, which has led to our present commercial embarrassment. The old-fashioned home-made cloth has given way to the fine broadcloth coat; the linsey-woolsey dresses of females have disappeared, and English and French silks substituted; the nice clean-scoured floors of the farmers' houses have been covered by Brussels carpets; the spinning-wheel and loom have been superseded by the piano; and, in short, a complete revolution in all our domestic habits and manners has taken place—the consequences of which are, the accumulation of an enormous debt upon our shoulders, and its natural concomitant, political strife; for who has ever heard of an embarrassed community being a peaceable one? The old aphorism, "when poverty comes in at the door, love flies out at the window," has as much force in our social constitution as in our domestic concerns.

Thus, gentlemen, I have endeavoured to give you a cursory glance at the rise and fall of Canadian farming-prosperity, and shall now with equal candour endeavour to point out a path by which we may at least arrest our downward course, and regain that position, both as a people and as individuals, which we have lost by extravagance and a want of the proper application of our industry.

I reduce the whole to four simple propositions:

1st, Reduce our expenses.

2nd, Cultivate less land.

3rd, Vary and increase the number of our farm products.

4th, Manufacture for ourselves.

The first step, then, is economy in our way of living. If we profess to be farmers, let us live like farmers. A man, his wife and daughter, are neither more comfortable nor more respectable in fine English broadcloths and French silks, than they would be in our own home manufactures: nay, is it not notorious that they are always *more* respected when dressed in home-made than in foreign cloths. I was almost a grown-up young man, before ever I knew that there were such articles as fine English and French goods. Time was, when our matrons and young women took pride in exhibiting—instead of concealing—their own articles of manufacture; aye, and when they were not ashamed to be found, during the haying and harvesting season, assisting their husbands, fathers and brothers. Neither did our farmers feel ashamed to be seen carrying to market the various minor productions of the farm, farm-yard or garden. *In those days, gentlemen, we were out of debt; it was then considered disgraceful to owe more than they could pay. Is it considered so now-a-days? How many there are now, who would consider it quite derogatory to be seen in the old gray clothes, and attending personally in our markets the sale of these commodities. In these days, gentlemen, we are in debt; and I will add dishonestly in debt—dishonestly, because we are actually living upon other people's money.*

But, gentlemen, do not imagine that I am excusing the other classes of society—these are more to blame than the farmers.

In the early history of this country, we all held, in our mode of dress, equipage, furniture, &c., one station, as it were, and when we saw nothing to envy we felt no inferiority; but with the advent amongst the rural population of government officers receiving large salaries, gentlemen of good incomes, professional men, merchants, &c., came also pride and envy amongst the farming population, until the extravagance of which I have been speaking has been carried to such an extent as to attract the observation and excite the ridicule of the traveller through Upper Canada. It is this extravagance which has entailed upon the country disgrace, and upon hundreds of families dishonour and ruin. I should most willingly see the incomes of all professional men, including all public officers, reduced to one-half their present amount, if it were for nothing else than for the benefit which would in consequence accrue to the farming interests of the country.

I am not willing to be, nor do I think I shall be, understood, in the observation which I have now made, as refusing to the professional man or the public officer a competent income; but I do wish to be understood as expressing a settled conviction that the extravagant salaries and incomes to a few have been the remote cause of the present deplorable state of indebtedness of the country, and consequently the primary cause of the depression and derangement in our commercial affairs, at this moment in existence.

The second evil to the prosperity of farmers,

arises, in my opinion, out of their occupation of too much land. In the early settlement of the country, this could have no injurious effect; but after a few years, instead of bringing under a proper state of cultivation the fields which had been already cleared, the strife between neighbours consisted in the quantity of *new* land which they would sow, and from that to the quantity which they were able to own; and this led to imprudent speculations in purchasing wild lands, to be held over for their families; thus setting a bad example to those around them—saddling themselves with heavy debts, the effects of which are at this moment pressing many a man to the ground. The origin, however, of this mischief lies in the mistaken though paternal intentions of good old George the Third, in causing the allotments to the U. E. Loyalists to be two hundred acres each. If only one hundred or even fifty acres had been the quota, I am fully persuaded that we should this day have seen a very different face upon the country.

We have now the most indubitable proof, that the aggregate production of any agricultural country or district is increased with the subdivision of the land. That the accumulation of large tracts of land in the hands of a few persons, is injurious to every agricultural country where it is permitted, we have not only our own experience to convince us at this day, but also the experience of the old world. It is recorded in the old testament, that the landed estates both of the kings and some of their subjects were large; for we read that Uzziah, king of Judah "had much both in the plains and in the low country; husbandmen also, and vine-dressers in the mountains and in Carmel, for he loved husbandry"; that Elijah found Elisha with twelve yoke of oxen at the plough, himself being with the twelfth yoke; and that Job, the greatest man of the east, had fourteen thousand sheep, six thousand camels, one thousand yoke of oxen, and one thousand she-asses. And such, it appears, had been the accumulation of landed property in the hands of a few proprietors, in the time of Isaiah, that that prophet was inspired to utter a curse against its engrossment: "Wo unto them that join house to house, that lay field to field, till there be no place, that they may be placed alone in the midst of the earth."

The third suggestion is, that we vary and increase the number of our products.

The principal article of produce for exportation upon which we have hitherto depended, is wheat. We are yet, it is true, making lumber to some extent up the Ottawa, the river Trent, and a few other places in the Upper Province, yet it is evidently dwindling into insignificance, and what is made yields now little profit. It is also true, that within the last few years a considerable traffic in sawed lumber has been carried on with the United States; but it strikes me that, although this affords a present relief, it will result in an actual impoverishment of the country. We are, so far as this article goes, living, in fact, upon the proceeds of a post-obit upon posterity. At any rate, we are paying the United States for their privilege of exporting timber and wheat, in the shape of

duties, about half a million of dollars a-year! But, gentlemen, there is nothing like free trade!—we certainly have the option to pay this or let it alone.

Wheat, then, having always been—and being now, indeed—the staple and principal article of export, upon which we can in future rely, its cultivation, undoubtedly, is of the very first importance to Canada. I hope, therefore, that I shall be excused, in so far departing from my original design, as to take a hasty glance at a few prominent points in the process of its cultivation.

The origin of wheat cannot be traced out. The general opinion seems to be, that it has been produced from the cultivation of a mere grass. It is quite certain that its cultivation was very general one thousand years before the Christian era; for it is stated in the 27th chapter of Ezekiel, that "Judah traded in wheat of *Minmith*." But it is stated, that from the passage, "in the sweat of thy face shalt thou eat bread," it may be inferred that it was coeval with creation. However this may be, we know that it is the most valuable plant known to man; and that from the beginning of its known cultivation, this cereal has been the principal object of the husbandman's solicitude. The Romans enumerate thirty varieties, and at this day there are hundreds. May it not be that, inasmuch as we know that the number of varieties has increased, and that so far as we are enabled to trace it up, the quality has improved; that by the aid of science, such a revolution in its production may ere long take place, as will, either in quantity or quality, or both, increase its value to an extent which at present it is impossible to estimate; and so also with other cereals.

One of three things—so far as human judgment can divine—must take place: either the earth must yield more food for man, or war, pestilence and famine must thin the human race; or else the Malthusian plan of preventing the propagation of the species must be carried out. We need not place much dependence upon the last of these, but war, pestilence and famine have for some time been, and are now, rapidly sweeping off the human race. That the culture of wheat, in the United Kingdom especially, has within a very few years been much improved, we have sufficient evidence in the fact, that even with the annual increase of the population, the importation of foreign grain has decreased, and is continually decreasing; so that by the aid of science, and consequent improved systems of husbandry, it is consoling to know that under a fast-increasing population, the dependence on a foreign supply for bread is continually growing less. A very erroneous impression is abroad with respect to the dependence of Great Britain upon the United States for bread. The fact is, that whilst Great Britain imports ordinarily twenty millions of bushels of foreign corn, only two millions come from the United States. I do not take into this account the last two or three years of unusual scarcity, arising chiefly from the potatoe failure.

The cause to which the increase of production is mainly attributable, is the small farm and allotment system, which has been lately making its way rapidly in public favour. The small farmers

are those who rent from five to ten acres; the allotments to servants are from half-an-acre to two acres; and whilst the clear money profit of these small farmers has averaged double that of the large farmers, the small allotments have doubled upon the small farmers.

Mr. Colman, who has lately returned to the United States from a tour of observation upon European agriculture and rural economy, gives numberless instances where the single acre in the hands of a farm servant has produced, clear from all disbursements, £20 sterling, besides provisioning the labourer and his family! And Mr. Colman remarks upon the whole:—"We have," he says, "in the United States, beyond question, a large number of farmers who, if they would cultivate, to the utmost of its capacity, a small extent of land in the most thorough manner, would find themselves comparatively independent; whereas now, without capital, spending their deficient labour over a large surface, and doing nothing thoroughly, they lead a life of vexation, toil and disappointment, without any compensating result." Mr. Colman gives several instances in which the small farmers have grown from sixty to eighty bushels of wheat upon an acre; and the weight of potatoes and other roots is really incredible—from upwards of thirty to forty tons per acre.

But time demands that I should hasten on to the other parts of my subject. I shall therefore, in reference to the fecundity of wheat, conclude with an extract from an address delivered before the Erie County Agricultural Society, by Dr. Lee, an extensive practical farmer, and also a member of the legislature of the State of New York.

"You all know," he says, "that a single kernel of wheat will sometimes, when its fecundity is highly stimulated, send up twenty stalks, and that each stalk will bear a head containing one hundred kernels. Here is a yield of two thousand fold. Nature, then, has rendered it practicable to harvest two thousand bushels of good wheat from one bushel of seed. The most sceptical among you will not deny, that two thousand kernels have been produced from one kernel, and that the same natural causes that produce such a result in one instance, will ever operate at all times, under like circumstances in the same manner. Hence it is but reasonable to say that nature is quite as willing to produce fifty bushels of good wheat on an acre of ground every year—mark me—if *her laws be obeyed*, as she is to grow fifty bushels of weeds every year on the same ground."

A great part of Upper Canada is but now in a state of transition from a new to an old country; and it is not surprising that upon a virgin soil, our chief attention has been bestowed upon the growth of wheat; the culture of which having been attended with little trouble, comparatively, and less skill. Nor can it be wondered at that, when a whole people have for sixty-five years, as in this province, steadily followed in one track, some difficulty will be experienced in persuading them at once into the adoption of a new system. But, gentlemen, notwithstanding that old prejudices are great stumbling-blocks to improvements, the time has come, in my opinion, in which we must learn

something new. We must turn our attention to those productions which, hitherto, have been erroneously considered of little or no importance. And especially must we be convinced of this, now that that protection which we have hitherto enjoyed is withdrawn, and we are left to compete with the world. Nor is it probable that this boon will be restored to us, so long as the manufacturing interests of the mother country maintain that ascendancy over the agricultural interest, which, after a lapse of several ages, and after a struggle for mastery which is unparalleled in the history of any country, it has now attained. Agriculture and manufactures will work harmoniously together and with great advantage to each other, so long as the people have bread; but the moment that food fails, a struggle must ensue; and the issue of any *such* struggle cannot long remain doubtful. It is the struggle for bread against the wish for a garment; the one involves a matter of life and death—the other, merely a coat of finer or coarser texture.

Manufactories are not universal—the production of food is—those are local in their establishment and coeval and co-extensive only with pride and luxury, and therefore of no importance as compared with the production of food, which must ever be co-existent with the life of man. This must, therefore, ever stand at the head of all establishments; and especially of every country that would be a prosperous one. Whenever and wherever it is otherwise, there may be pride and luxury, but not peace and contentment—riches, but not prosperity. One cannot help seeing that wealth and prosperity are not always co-incidental; that wealth is not, therefore, the infallible index of prosperity. In many cases—and it must be so in all countries in which their agricultural interests are secondary to those of their manufacturing—the extraordinary accumulations of wealth on one side are followed by a corresponding depression on the other; while the rich are made richer, the poor are made poorer. In the richest communities the price of labour is always the most depressed; and with the increase of manufactories—where they are carried to a luxurious extent—the desire of indulgence is quickened in all classes.

My opinion, therefore, is, that whilst manufactories are injurious to any country in which they obtain a predominance, they are indispensable to the prosperity of every civilized country, in which they are not permitted to exceed those bounds which involve the necessity of looking to foreign countries for food.

I have stated, that we must in the article of wheat now compete with the whole world. The question is, can we do so, either in the United States or Canada? I fearlessly answer, *we cannot*. No man need tell me that the wheat-grower, in any part of the American continent—whose cost for labour, including provisions, amounts at least to eight times as much as it does, on an average, in Europe, a great part of which is even better adapted, as it respects both soil and climate, to the growth of this plant; and who is, moreover, obliged to pay double the freight and insurance for the transport of his produce—can compete, in

the market of Great Britain, with the European foreigner. It is worse than folly to think of such a thing; and whoever endeavours to persuade you to the contrary, is only flattering you, unintentionally perhaps, to your own injury. What then is to be done?

I answer, manufacture yourselves those things, for the payment of which you are now obliged to send your produce to a foreign market—strike off one half of your expenses in living—turn your attention to the production of butter, cheese, wool, flax, hemp and tobacco, and many minor productions, to which we now pay little or no regard; and, after we have produced them, see ourselves to their being properly marketed. Let us, in this respect, take a leaf out of the books of the old-country farmers, who are settled amongst us, and who, in many instances, have risen from a state of indigence to one of affluence and wealth.—They have learned a great deal from us; let us not be ashamed to learn something from them.

I have no objection to see a proper jealousy between my own country people and those from the old countries; this is upon the whole to be regarded as rather beneficial than otherwise. It clearly evinces an awakened curiosity and ambition to emulate. A jealousy arising from a laudable ambition only, is much more desirable than a total indifference and apathy, which are ever the invariable offspring of an invincible ignorance.

Until within the last few years, the Canadian had little or no occasion for the application of science in his farming operations; he has had the original or virgin soil only to work upon, which in general requires but one process; hence it is, that in those parts of Upper Canada, which have been long cleared, and are rendered susceptible of the application of scientific management, the old countryman looks with pity, I may almost say contempt, upon the system followed by the Canadian—whilst in other parts of the country the Canadian is indescribably amused by the doleful and awkward appearance of the old countryman, set down upon a hundred acre wild lot, with his long-billed axe attempting to cut down his first tree, or expending his labour and means in grubbing up stumps!

I have made these few remarks in reference to the two classes of people, in order to shew, that the supposed superiority of the one over the other has in fact no foundation whatever; for it is clear, that the one without the other could not, for generations to come, make this, what it is *now* shortly destined to become, a great farming country.

The *philosophy* of farming, if I may use the term, lies, in my humble opinion, less in the *amount* of crop, than in the "*keeping up*" of the land. A man, either from his own experience, or the experience of others, should be enabled to judge what work his land can bear, in the same way that he would learn what labour his horse is enabled to undergo. Different soils require different modes of cultivation; this every man knows; but every man does not know *what* these different modes are: and the man who is content to drudge on as his father has done before him, without look-

ing either to the right or to the left for information, may, and there are many who do, it is melancholy to think, live out a long and laborious life in comparative poverty, the result of an overweening prejudice.

Let us not then be ashamed to learn from each other. But to return.

We must henceforward encourage all sorts of manufactories throughout the country, and, until we can be thence supplied, set a-going within our own dwellings the old-fashioned spinning wheel and loom. We must, male and female, wear our own manufactures, and, like the New Englanders, live upon the old-fashioned rye and Indian corn, the healthiest food in the world, and thus make a long pull, a strong pull, and a pull altogether, until our debts are paid.

I may be told the old story, that we can buy with cash all these goods cheaper than we can make them. This would be perfectly true, provided we could obtain cash for all we could raise, at a remunerating price; but it is perfectly false, when our only article of export, and for which alone we can get money, must be sold for *less than it has cost us*. To sell in the dearest market and buy in the cheapest, always pre-supposes that we have something to sell, and that the price we obtain *will repay the cost of its production*—otherwise this fine theory turns out to be a mischievous fallacy. A farmer can no more sell *his* goods under cost than the merchant can his. The farmer's goods consist of food, and like the retail shop-keeper, the greater the variety of his articles and the greater the number of his customers, the more money he will make. Hence it follows, that if he can supply the mouths of those who manufacture the goods which he needs, without the intervention of the host of agencies and consequent enormous charges, to which he is now subjected in the exportation of his produce and the importation of his goods, all of which is sure to come out of his pocket, the better evidently will his position be. In such circumstances, little or no money would be required; so long as we can supply ourselves or be supplied within our own country with the various commodities which we need, a mere barter business or exchange will accomplish it all. One dollar circulating within our own territory will, in such case, represent and go as far as fifty dollars sent to a foreign country. What millions would thus be saved to the country in the single item of foreign exchange. What hundreds of thousands of pounds for bank accommodation—what tens of thousands in law costs—all of which, as I have before stated, must now be dug out of the ground. Capitalists would soon find, that stocks in manufacturing establishments would be more profitable than in banks, to which we are now contributing about 250,000*l.* a year!

In so strongly urging upon you the necessity of multiplying and varying the productions of our farms, and especially an immediate attention to the dairy, I cannot help repeating what I said a short time ago, to a neighbour, with whom I was discussing this very subject. I said I had been about twenty-two years sheriff of a populous district, and whilst in the performance of my duty

some hundreds of mere wheat-growers had come under my special cognizance, not a single one who had been engaged chiefly in the dairy business, had during the whole of that period, to the best of my recollection, come within the fangs of the law.

It is true that we cannot perhaps at once make the transition, from a wheat growing to a dairy producing people; because the latter requires, not only a long course of practice, but also a mental training, to which, from various causes, but chiefly from the newness of the country, we have hitherto been strangers; but it is time that we make a beginning, and those who are first in the field will be the best off. Dairy farming is, in fact, the philosophy of husbandry. The dairy will produce butter, cheese, beef and pork, and will, besides, contribute materially to the enrichment of the land for the production of grain; whilst the mere wheat grower must be dependent, in a great measure, upon foreign manures. It is, indeed, supposed that a stock of cattle and sheep properly housed and fed, will contribute, by the production of manure alone, a sum equal to the value of the fodder which they consume.

The subject of dairy husbandry is one of the most interesting, as it certainly is one of the most profitable, which can engage the attention of the farmer. It would, of course, be entirely out of place for me, at this time, to enter into details; but I cannot help referring you to the able report of Mr. Colman, whom I have already mentioned; and, if evidence of the profitableness of the dairy be required, you will there find it supplied. This gentleman has shewn the clear profit of one cow to be in the United States \$18; in England \$24, and in Holland 100 guilders, or about £10 of our money per annum. I would refer you also, whilst I am upon this subject, to our own agricultural periodical, published at Toronto, and edited by our worthy, talented and indefatigable Secretary, Mr. Buckland, for some excellent remarks and directions upon this important subject.

I am by no means willing to be understood, in my recommendation of the dairy business, and the general extension of the productions of the smaller produce of the farmstead, to mean that these should supersede wheat and other grain, but that they should be added to, or grafted on our present system. There are none of the native Canadians or old settlers, who can be blind to the fact, that since we have left off the growing and manufacturing of wool and flax, and have substituted nothing in the place of the indoor-work which they supplied, and without which no farmer can prosper, that many hands are left idle, and many hours pass away unemployed, and, in consequence, the whole expense of the farmer's establishment must fall upon the clean bushels of wheat alone. Only look at the New Englanders, where, so far from selling, they are obliged to buy their wheat; and where, to use the words of a friend of mine from those states, the stones are so thick that they are obliged to go six rods to get earth enough to cover a hill of corn; and yet these people get rich. It is owing, he says, to the circumstance that every hand works—whether foul

weather or fair—the attention of the whole household is directed to the “littles”—the pence; the pounds can take care of themselves. It is also worthy of remark, that in the dairy producing districts of England, as well as America, the moral tone of the people stands higher than in other parts; arising, no doubt, from the circumstance, that under such a mode of husbandry there can be few idle hands.

Gentlemen, let not the drift of these observations be misconstrued to mean that the farmers of Canada are not themselves as industrious as the farmers of any other country, but my fear is for the rising generation. This would perhaps be too delicate a point for most men to touch upon; but it happens to be well known to a great number of those whom I am now addressing, that I have at one time in my life shared some of the hardships incident to the farming life in a new country, and that I have laboured with my own hands as hard as most men. It matters little indeed, to those who have arrived at my years, how the world gets on in its future course, but to our children it is all important—it is to *their* welfare that our efforts must now be directed, and it is principally for *their* benefit that an example of industry, prudence, economy and morality, is required at the hands of their parents.

I cannot shut my eyes to the fact, nor refrain from expressing an apprehension, that our *children* are in great danger; that our sons and our daughters, from no fault of theirs, are in danger of contracting habits of idleness. It is as much our business to furnish employment, and constant employment, for the minds and hands of our children, as it is to find them food and raiment: whilst the one protects and invigorates the body, the other purifies and exalts the mind.

How many young men, and many of them farmers' sons too, even now, in the infancy of the country, do we see, who are becoming a burthen to themselves and a nuisance to the country from mere idleness; and are in fact, from early habits, incapable of any useful exertion. “There is a lion in the way, I shall be slain,” says the idler; “The way of the slothful man is a hedge of thorns, but the way of the righteous is made plain.”

Some of you whom I am now addressing, may live to see the day, when agriculture will be elevated as a pursuit and a profession. That indefatigable officer, our Superintendent of Education, is, I am beyond measure gratified to see, bending his giant energies to, and bringing to bear his powerful mind upon, the attainment of this object, an object which can only stay or check that rush for wealth, for office and notoriety, which amongst the young men generally of the province, is like a torrent sweeping over the country, and carrying away every moveable object in its course.

When agriculture as a profession shall be made to assume that station to which it is entitled, then the hundreds and thousands of young men who are now crowding the professions, and forcing their way into all the avenues of trade and pursuits of mercantile business, will find employment in the much more useful as well as equally honourable profession of agriculture.

But this is not the place to moralise. I must hasten on to the close of the subject, in the discussion of which the difficulty lies more in what I shall leave unsaid, than in that which I shall say.

One part of the subject, however, and which perhaps after all is the most important, is the mode and manner in which our profession can be most effectually assisted by the application of science.

Amongst many of our farmers, both Canadian and old country, the *theory* and *practice* of agriculture are still studiously kept in *opposition* to each other, and form, when thus understood, a sort of "vexed question," which will at times excite in their several advocates unseemly and unprofitable contention.

I am not myself one of those who believe that there was no science in agriculture until *Davy* and other modern chemists wrote. Although we have no account of the *theory* of agriculture having been taught by the early eastern nations, yet a steady advance in the art is clearly discernible in the Old Testament, whose records abound with descriptions and accounts of "flocks" and "herds," cattle, sheep, and even their diseases, as well as "sheep-folds," "stalls for all manner of beasts," and the manner in which their provender was prepared. That they were acquainted with the arts of the dairy is also manifest. "Surely," says Solomon, "the churning of milk bringeth forth butter." And Samuel speaks of the "cheese of kine." Their chief productions of grain were, wheat, barley, beans, lentils and rye. We have no reason in fact to doubt that they were skilful husbandmen. They ploughed and sowed much the same as we do at this day. They had hoes and mattocks. "On all hill sides," says the prophet, "that shall be digged with the mattock there shall not come thither the fear of briers and thorns." In Egypt they irrigated their lands. When their corn was ripe it was cut with the sickle or scythe, bound into "sheaves," threshed, fanned and ground into flour.

The Greeks, too, it is evident, improved upon the art to a very considerable extent. Xenophon, who lived some hundreds of years before the Christian era, wrote largely upon agriculture, and that he thought deeply upon the subject is evident from his writings. "No man," he says, "can be a farmer until he is taught by experience; observation and instruction may do much, but practice teaches many particulars which no master would ever have thought to remark upon." "Before we commence the cultivation of the soil," he observes, "we should notice what crops flourish best upon it; and we may even learn from the weeds it produces what crops it will best support." He recommends "fallowing" and "frequent ploughing." Xenophon also recommends green plants to be ploughed in, and even crops to be raised for the purpose; for "such," he says, "enrich the soil as much as dung." He also recommends earth that has been long under water to be put upon land to enrich it, upon scientific principles. He says the stubble should be left long, and barned upon the land. Homer enforces the necessity

of "water courses and ditches," that they may be made to drain away the wet, which is apt to do great damage to corn." There is, indeed, scarcely an end to the writings of the Romans upon agriculture. And it is really curious to notice how their system two thousand years ago, goes nearly on all fours with ours at this day; so much so, indeed, that one is almost brought to doubt whether much improvement in agriculture as an art has taken place. Now will any one undertake to prove that there is no science in all this?

I have made these observations in support of those who argue that modern agriculture is not so very far ahead of the ancient system as many would make us believe. "There is nothing new under the sun," says Solomon; and this remark holds as good at this day as it did three thousand years ago. The principal difference in agriculture as an art, and indeed as formerly practised, and agriculture as a science, and as now placed before the world, consists in having, by the aid of a knowledge of chemistry—that is, the power of discovering the constituents of bodies—been enabled to bring the laws of nature under subjection to our will, and adapting them at pleasure to the useful purposes of life. Of this the ancients knew nothing. And that the wonderful discoveries made in chemical science are one day destined to make two grains of wheat grow where but one grew before, no reading man can any longer doubt. It is true that chemistry is but of modern date; there are indeed those living who may be said to have rocked the cradle of its infancy; and it is intimately connected with the practical arts, and especially with the advancement of the great art of agriculture, the most important benefits to which must result from its study and application. In thus looking at both sides of this disputable ground, my desire is to bring the theory and the practice of agriculture a little nearer together. They are, in fact, inseparable. Give me, says the common thinker, only a little practice, and a fig for the visions of theory. Science, however, is, without any doubt, the great source of instruction for practice; and it would be just as reasonable for the man who lights the gas lamps in our streets, to laugh at the German philosopher who discovered the use of gas, as it is for practice in general to undervalue theory.

It is not yet sixty years since a Scottish nobleman gave the first hints as to the application of chemical science to agriculture. It is not forty years since these hints were enlarged upon and enforced by Sir Humphrey Davy; and even to this day, important as agriculture is to all men, most rural operators proceed upon practice alone, and are totally ignorant of many methods suggested by scientific men, of cultivating the ground in a much superior manner.

Now, gentlemen, although I am unwilling to undervalue practice, I cannot too much overvalue *reading*. In this single suggestion—reading—not theory, lies the difficulty, and also, in my opinion, the very germ of our prosperity as farmers. I have known many a person, both as farmer and mechanic, labour hard and die a poor man, whilst on the other hand I have known those who have

amassed large properties with comparatively little physical exertion—the one was a reading man, the other was not. I do not intend by this to convey the idea that every farmer should become a chemist; all I mean is, that every farmer should keep himself constantly informed, by means of books and papers, of all the practical improvements in his profession—not of the theory, but of the *practice* of others. It is not necessary, in my opinion, for a farmer ever to look into a book on chemistry; let this part of the business be left to the professional and experimental man, and let *him* give, in a popular and tangible form, the results of his labours. I can point out, with very little danger of being mistaken, as I travel through the country, the farmer who reads, and the one who does not read. This is not all. I can shew more than one instance in which farmers, of apparently equal circumstances as to property, but unequal as to intelligence, the reading man in the course of a few years becoming possessed of his neighbour's farm, and the *practical* man being obliged to go into the back woods. The fact is, the man of intelligence always has been and ever will be the master of the ignorant. The naturally intelligent, who is necessarily also a reading and thinking man, will adopt of his own accord every feasible suggestion, whilst the other will feel indignant at the idea of receiving instruction from any source. It is true that we have hundreds of what we call good farmers throughout this country, who know nothing of science, but it would be difficult to point out one of these, who is not a reading and a thinking man; whilst we have thousands whose prejudices are so strong as to put at defiance every effort for their removal. Such men should be cautiously dealt with; any attempt to force upon them an improved system is almost certain to fail. "A horse loose in a pasture," says an experienced agricultural writer in reference to this matter, "can rarely be caught if you approach him swinging the bridle—the emblem of his subjugation—before his eyes; but if you go to him, shaking only the measure of oats before him, and concealing the bridle under your coat, you can generally take him without difficulty."

The man who expects to make money by farming, must be a thinking man, and he must think correctly, which he cannot do without availing himself of the experience of others, obtained either by personal inspection, or by reading. So dependent upon circumstances and various are the operations of the farm, that unless the head is capable of embracing a multitude of minutiae in advance of his work, the farmer must inevitably be subject to constant losses. To be a farmer, requires, in fact, a mind schooled into every conceivable mode of calculation, and it is only in as far as his judgment is formed upon calculations, fixed principles and experience, that he will succeed.

Exercises of the mind in reflecting upon the course of nature and the processes of cultivation, are of vast benefit. Where the various crops in the field are made matters of study, they possess a value and an interest distinct from the amount of money they bring in. They become one's teach-

ers; they give him lessons to be treasured up and used. And it is those only, who seek to learn and profit by these lessons, who really are intelligent and exemplary farmers. A few, by dint of unwearied toil from year to year, and by a soul-pinching parsimony, may get money; and this too without observing any lessons, excepting a few brief ones which were inculcated by others while they were young. But those who stick to the old way, through thick and thin, and for no other reason than because it is the old way, are not good farmers; they are little more than common labourers, who by dint of perseverance get some money, but little else worth having. We are not ridiculing the old ways, but only saying they should be compared with new ones. That the old are, in many cases, the best, is undoubtedly true; that new ways are sometimes better than old, is also as undoubtedly true. It is only by comparing them, that one can satisfy himself fairly and properly which path will lead him most directly to the desired object.

Is your corn best, when planted deep in the soil, or when put near the surface? Does the cornfield yield a better crop, when you spread all the manure, or when you put it wholly or in part in the hill? Is it best to make large hills or small? How many stalks should be left in a hill? How many hills upon the acre give the largest crop? Is it best to plant in hills or in drills?

For potatoes, is it best to spread all the manure? Or will you put it in the hill? If in the hill, will you have it below or above the seed? Are hills or drills best? Do you cut the seed or plant it whole? Do you put the seed deep in the earth, or do you keep it near the surface?

Is grass seed best sowed with grain in the spring? Or will you sow it in August or September? Or will you seed down to grass with your wheat, whether in spring or fall? Will you simply turn over your bound out grass land—top dress and put on the grass seed? Which of all these is the safest or most profitable?

Shall your manure be ploughed under the sod, or will you, after ploughing, put it on the top and harrow it in? Do you find the most benefit from it when you use it fresh from the barn, or when you let it ferment and pulverise before it goes upon the land?

These and a thousand other questions are disputable, and correct answers to most of them you must learn by observations upon your own land and the lands of your neighbours. If we will but use our experience, and our common sense, in connexion with books, we will find the books valuable aids.

To conclude this address. I find it a duty to apologize for the length to which it has swelled out. Before I conclude, however, I cannot refrain from reminding you, that upon the farmers alone depends the prosperity of the country—with them alone it rests whether wealth or poverty shall be the inheritance of our children. All other classes of society are, comparatively, indifferent spectators. Your responsibility, therefore, is great, and the duty you owe to God, to your country, and to your children, requires that your exer-

tions should be correspondingly great. And, as we all know, that as of ourselves we can do nothing, it is not meet or proper that I should close without reference to Him who maketh the grass to crown the mountains, and the valleys to smile with the ripening corn. It is from Him alone that all good things do come. It is in vain that we rise up early and so late take rest, if His blessing does not accompany our exertions. In all our efforts to obtain a livelihood, competence or wealth, especial reference must, in every step we take, be made to God, whom, if we devoutly and reverently acknowledge in all our ways, will, as surely as he has promised it, direct our paths.

HOME DISTRICT AGRICULTURAL SOCIETY.

The Autumnal Exhibition of this society took place on the 17th October, at Richmond Hill. The day previous was exceedingly wet, and the morning of the show day was any-thing but promising; but as the clouds began to disperse, and the genial rays of the sun put forth their cheering influence, a great number of people were drawn to the spot, where there was to be seen a goodly array of cattle, sheep, pigs, grain and other productions, usually met with at an agricultural show. We will now endeavour to give our readers a concise general view of the exhibition.

The horses were numerous, and, speaking generally, they were of a useful kind, several of them possessing qualities of very high merit. There were some eight or ten two-year-old colts which were sufficient of themselves to give a character to this department of the show. A still larger number of spring colts, together with their dams, afforded pleasing evidence that this important district is improving in its breeds of horses, particularly in those best adapted to agricultural purposes. As much of our land has now been under culture for a considerable period, a deep and thorough pulverization of the soil is yearly becoming an object of greater importance. We are glad to see an increasing disposition among our breeders of horses to combine adequate muscular power with quickness of motion. We must not omit to state that the blood mares, with their colts, were of a character to call for high commendation. Mr. Ashford's prizes for the best and second best colt and filly, from his celebrated horse "*Young King Alfred*," were awarded to Robert Erwin and Elias Snider, both of the township of York.

Of the cattle we can say but little in their praise. In this very important department, the exhibition was not creditable to the district. There was a few good fat cattle, but the absence of the pure breeds must have been strikingly obvious to the most casual observer. The previous state of the weather may partly account for this; but fresh imported blood, it would appear, is now become essentially necessary in the district. These are matters requiring constant attention and the exercise of a discriminating judgment. Well bred cattle, adapted to the wants and physical conditions of a country,

are essential to any improved system of husbandry. We can hardly think that the Richmond Hill show afforded a fair specimen of the neat cattle of the Home District; a fact, however, has been disclosed, which demands the serious attention of our farmers. A liberal outlay in improved stock, when under judicious direction, will always yield a profitable return.

The sheep in great measure made amends for the inferiority of the cattle. This part of the show was highly creditable; and we observed some fine specimens belonging to Mr. Miller, of Markham; and some rams of superior merit, owned, we understood, by Mr. Simpson, of Whitechurch, and Mr. William Miller, of Pickering, and others whose names we did not ascertain. Of Swine the number was small, but upon the whole we should say of excellent quality, indicating a marked improvement upon former years.

The show of implements was sadly meagre. An iron plough on the Scotch principle, a subsoil plough, a set of iron harrows, a seed drill, with a few chaff cutters, were all that we saw deserving of notice. We think the manifestation of more public spirit among our mechanics would, even in a pecuniary sense, answer their purpose. How different is it in this respect among the Americans! We noticed a very ingenious contrivance for gathering fruit with facility and without injuring the trees—an invention, we understood, of Mr. Holwell, of the Ordnance Department. There was something similar exhibited at the New York State Fair at Syracuse.

The committee had provided a large room for the exhibition of grain, roots, dairy productions, &c., and we must say the display reflects great credit on the skill of our farmers and the improving state of our husbandry. The wheat was superb; the specimens which obtained the three prizes belonged respectively to Messrs. Auburn, Dew, and Watson, and we should say could scarcely be excelled in any country. Mr. Franklin Jacques had some superior spring wheat, for which he obtained the first prize. The Indian corn, shewn by Capt. Shaw and Mr. R. L. Denison, could hardly be surpassed in a more southern latitude. The Swedish turnips, exhibited by Messrs. Dalzell and Denison, were very large and mostly well grown. We also observed some good specimens of white and yellow turnips, mangel wurtzel, and some splendid Belgian or field carrots, grown by Captain Shaw, whose gigantic pumpkins were the wonder of all beholders. The potatoes were excellent, and apparently free from disease. Of hops there were several bales, mostly of good quality, which might be made still better by cleaner picking. Butter was in abundance, and the general quality so good that the judges must have experienced no small difficulty in their decisions. Of cheese there was but little; and as we did not taste it, all we can say is that others who did pronounced it pretty good.

As this is the first instance, of the District Show being held out of the city of Toronto, we must congratulate the Directors as well as the Commit-

tee of the Yonge Street Agricultural Society, who undertook and carried out the arrangements, in conjunction with the two Secretaries, Messrs. Wells and Crew, with so much promptitude and ability, and, as it proved in the final result, with so much success. We therefore confidently look forward to occasional meetings in other suitable parts of the district, in years to come; and when again the exhibition shall take place in Toronto, we hope and trust the citizens of all classes will be more prompt and liberal in aiding the society than they have been for some time past. It is a truth which requires only to be stated to be recognized, that the main source of our wealth and prosperity can be found nowhere else but in our agriculture.

We have omitted to say that, at 2 o'clock, Mr. Hind, of the Normal School, delivered an interesting and useful address on some of the applications of chemical science to practical farming, the substance of which we hope to lay before our readers in the present number. The lecture was delivered out of doors, and consequently much of its effect was lost. We regard the introduction of an address on these occasions, not only as new, but as an exceedingly important and encouraging feature, and we hope the society will continue the practice. It is, however, most desirable on several accounts that a large room should be obtained, if possible, for this purpose.

MR. HIND'S LECTURE.

(From the *British Colonist*.)

The lecturer introduced the subject to his auditors by asking the question, What is Agriculture? He remarked, that forty years ago, few would have any hesitation in answering that question, and saying, Agriculture is the *Art* of tilling the soil. At the present day, however, men would be inclined to add another word to the definition, and say, Agriculture embraces the *Science* and Art of tilling the soil. The art of agriculture consisted mainly in mechanical operations for improving the condition of the soil, whereas the science of agriculture suggested those means which were best adapted for raising the largest amount of produce at the least possible expense of capital, and at the same time were capable of continually increasing the fertility of the soil, or at least preventing its deterioration. The lecturer then adverted to the consideration of the sources from which vegetables derive those substances which enter into their composition. A vegetable existed in two mediums, the air and the earth; from these sources all their component parts must in some way or other be derived. There were two modes, and only two, in which substances could enter into plants, either by the direct absorption of gases from the atmosphere, by means of the leaves, or of gases and solids dissolved in water by means of the roots. The main object, therefore, that the farmer had in view, was to prepare the soil in such a manner that certain of its component parts might be susceptible of solution in water, and at an early stage of its development an ample supply of leaves might be thrown out for the purpose of absorbing gases from the atmosphere. The lecturer then proceeded to remark, that from ninety-five to ninety-nine parts out of a hundred of every vegetable had previously existed in the form of gases; that these gases had been absorbed by its leaves or roots, and under the influence of heat and light were prepared for the exercise of that mysterious vital force which caused them to enter into the structure of

the plant; that the remaining five or less parts had before existed in the form of solid substances in the soil—one or two of which he would briefly allude to. First to flint, a most necessary element in the composition of the straw and seed of all grain-growing plants, and grasses generally. The introduction of flint into the composition of vegetables being obviously for the purpose of strengthening them, thereby enabling the stalk to support the fruit and leaves; secondly, to lime, phosphorus and sulphur. Although a vegetable might be perfect in structure, and capable of bearing fruit and flowers, yet if it did not contain these substances, it could serve little purpose in building up the framework of the animals which fed upon it—since the bones of animals required large quantities of lime and phosphorus to give them strength, while the hair always contained a considerable quantity of sulphur. He would now consider the mode in which a plentiful supply of proper gases might, by art, be afforded to plants. The names of those gases which vegetables most required for direct consumption were carbonic acid (the choke damp of miners), and ammonia (the gas which gives the strong odour to spirits of hartshorn). Both these gases exist in the atmosphere, carbonic acid to a much greater extent than ammonia, and that only to the extent of about one part in every two thousand of the air we breathe. When plants are so far developed as to be provided with leaves, they may obtain a large amount of carbonic acid from the atmosphere, but until they possess a sufficient quantity of leaves, they must obtain the carbonic acid and ammonia they require from the soil. The question which any intelligent and curious farmer would at once propose, the lecturer supposed, would be, How these gases were to be furnished to the soil for the use of plants? The usual answer to that question is, by manuring the soil. Manuring the soil, however, was far from being sufficient, and its inefficiency easily explained. In the air we breathe there is a certain gas possessing most powerful and energetic properties in its simple and undiluted state. The name of that gas is oxygen. The tendency which this oxygen continually exhibits is evinced in a desire to combine with every substance with which it comes in contact. No substance as yet known is capable of resisting the influence of this gas under favourable circumstances. With common charcoal it unites, and forms the carbonic acid already mentioned; with iron it unites, and forms rust; with many metals it combines, and constitutes earths—with every substance, vegetable and animal, the moment vitality is fled, the oxygen of the atmosphere seizes upon its decaying elements, combines with some of them, and ultimately causes nine parts out of ten to assume the form of carbonic acid, water, and ammonia. At the same time, therefore, that the farmer manures the soil, he must prepare it in such a manner that the oxygen of the atmosphere may permeate the soil, and accelerate the conversion of the vegetable manures he places in the soil into carbonic acid and ammonia. To effect that object a soil must be well and deeply ploughed to render it porous—it must be well drained to remove stagnant water and increase its porosity. When thus prepared, atmospheric air and consequently oxygen permeates every portion of the soil, and accelerates the decomposition of vegetable matter, furnishing a plentiful supply of carbonic acid and ammonia to the young plants. The time when these gases are most required by crops is when the seed is sown, before leaves have been thrown out. If they have a plentiful supply at the early periods of their growth, they will rapidly develop leaves, and in proportion as their leaves are developed will they obtain means of absorbing from the air additional quantities of that food, namely, carbonic acid, from which at least one-half of their substance is obtained. The farmer

possesses means also of giving large quantities of ammonia to his crops. The liquid manure of the stables contains much of that substance. When urine ferments it is almost entirely converted into water, and a compound of carbonic acid and ammonia. This compound, called carbonate of ammonia, is soluble in water, and above all other manures adapted to give food to vegetables. The drainings from stables should therefore be carefully preserved, thrown upon some compost heap, containing a considerable quantity of clay, and then, as occasion offers, strewn upon the soil. The lecturer then alluded to the mineral substances which enter into the composition of vegetables, such as flint, phosphorus, lime, sulphur, &c. He stated that the one fact to be borne in mind with reference to all substances which naturally exist in a solid form, was, that before they can enter into the composition of vegetables, or be taken up by their roots, they must be in a state of solution in water. Water, he said, possessed the property of dissolving small quantities of many mineral substances. The condition, however, of the compound parts of the cultivated soil was generally not such as would permit of a sufficient quantity of the necessary substances to be dissolved in water as to produce the most favourable development of the vegetables grown upon the soil. It was possible, however, so to change the constitution of the necessary substances as to afford a sufficient supply for the use of the crops. Flint and phosphorus usually exist in the soil combined with other substances, which render them insoluble in water, if the oxygen of the air acts for some length of time on such soils, it liberates certain compounds of flint and phosphorus, lime and potash, and renders them capable of being dissolved in water. First, therefore, oxygen must be allowed to permeate the soil, which, together with heat and moisture, will prepare these mineral substances for solution in water. Secondly, time must be allowed for this slow process to operate. To ploughing and draining, another artifice must be added, to effect the desired object, namely, the fallowing of land; but in order that the land may not lie idle, recourse must be had to a judicious rotation of crops. The benefits resulting from a proper rotation of crops, arose from the circumstance of some kinds of plants requiring less of certain substances to build up their structure than other species.—Wheat, for example, must have a large amount of flint and silica, to give the stalk sufficient strength to bear the weight of the ear; and although an enormous quantity of flint existed in every soil, yet it was not in that state which rendered it capable of being dissolved in water. Under the influence of the atmosphere, heat and moisture, the compounds containing this flint were slowly disintegrated or broken up, allowing water to dissolve a portion of the required substances. When crops, therefore, requiring little silica or flint were grown upon the soil, time was given for the air and moisture to prepare fresh supplies of the necessary ingredient for wheat crops and corn-growing plants generally. One apparent anomaly presented itself, in growing oats either before or after wheat, but susceptible of easy explanation. An average crop of wheat drew from one acre of soil about one hundred and eighty pounds of mineral substances, while a crop of oats abstracted only sixty pounds of the same minerals from an equal extent of surface. So that three crops of oats took from the land, of soluble mineral substances, not more than one crop of wheat. Ploughing and draining, the lecturer observed, have mainly one object in view, which is to expose as much of the soil as possible to the influence of the atmosphere; that object is effected by greatly increasing the porosity of the soil, and thus permitting air to circulate through it, which it will always do at every change of temperature. A rotation of crops allows time for the effects of these influences to

operate. The decomposition of the soil may be accelerated, and the amount of soluble minerals greatly increased, by throwing some substance upon the soil which is capable of assisting the decay and disintegration of vegetable and mineral substances in the soil. The element best adapted for effecting that object is lime. Lime not only rapidly decomposes vegetable matter, but it combines with some of the component parts of clays and sand, forming substances which are easily dissolved by water; if noxious compounds exist in the soil, it will convert many of them into suitable food for plants, or at least render them harmless. The soil in Virginia, which almost for centuries has produced luxuriant crops of wheat and tobacco, is now comparatively sterile. All the soluble mineral substances which it once contained in abundance have been abstracted from it, and no means adopted for accelerating the disintegration of the vast store it still contains, so as to render them soluble in water. Its fertility in many places is gradually being restored, by strewing lime upon it, and if that course be pursued for a few years, it will regain its original reputation. The lecturer then proceeded to advance a few observations on draining. You drain a swamp, and you convert it into excellent pasture land; does not this practical result afford a sufficient demonstration of the influence of air upon the soil. Where water is stagnant, no air can penetrate the soil in which the water lies; the decay of vegetable matter cannot be continued, and the disintegration of the solid constituents of the soil is at a stand-still—only such plants will grow upon it as are by their nature adapted for living in a soil saturated with water. Drain such a soil, and in a few years it will be converted into the most luxuriant pasture land. All soils of whatever character should be well drained, their temperature is thereby increased, and vegetables shoot forth much earlier on well drained than on undrained soils. The lecturer then expressed his opinion that draining, in this climate, was productive of the greatest benefits, but that subsoiling was an essential requisite in order that the beneficial influence of draining might be fully exhibited. Owing to the long continuance of dry weather in this climate, the soil frequently became altogether deprived of sensible moisture, to the depth of four, five, or even six inches; but if the soil is well drained and subsoiled, the root of a vegetable will penetrate far below the limit of dry soil, and obtain an unfailing supply of moisture, from a source removed from the evaporating influence of the hot sun in the summer months. Any farmer may satisfy himself of this fact, by digging perpendicularly to the depth of fourteen or fifteen inches, with a sharp spade, in the summer time. He will find the soil dry and parched for four or five inches; but at the depth of eight or ten, and below that, he will discover sufficient moisture for all the purposes of the plant, aided by the copious dews which fall at night.

With respect to the rotation of crops, he would remark that no fixed rules could be given, applicable to all soils; for the constitution of soils differed so much, that while on one farm wheat might be grown with success every third year, on others it would not be advisable to sow more frequently than once in every five or six years; experience or an analysis of the soil could alone determine the precise length of the interval. It is possible that an abundance of necessary substances may exist in the soil for the supply of a crop of wheat, and yet if wheat be sown, it is found to produce less than an average crop. How is this to be explained? The failure would doubtless be owing to the peculiar chemical constitution of the soil, and the nature of the crop grown one, two, or even three years before. The roots of clover, peas, and other green crops do not decay equally rapidly in all soils; their presence in the soil in a partially decayed state may be detrimental to the favour-

able growth of wheat; the remedy is lime. That substance will hasten their decay more rapidly, convert them into nutritious food, or render their remains harmless. Ashes will have the same effect. The lecturer concluded his remarks by stating that there existed no reason why the soil of Canada, under a judicious system of culture, should not produce as luxuriant crops as were annually attained in the mother country,—that from thirty-five to forty-five bushels of wheat per acre might with comparative certainty be depended upon,—but that it would require, in order to obtain such results, first, careful and deep ploughing; secondly, effectual draining; thirdly, a judicious rotation of crops; fourthly, the application of as much farm-yard manure as would equal in weight the crop taken from the soil; and lastly, a judicious use of *lime*, and in some cases common salt, especially on pasture land. It was not to be supposed, he observed, that in a single lecture, the rationale of agricultural processes could be more than hinted at. Time would not permit him to make any observation on the rearing of cattle, or that ratio which ought to exist between the amount of arable soil in cultivation on a farm, and the number of live stock which should be kept upon it,—a subject in itself affording ample field for much useful discussion.

THE DINNER.

This part of the proceedings went off exceedingly well; the only drawback being want of room. Mr. Dalby provided a good substantial repast, for the very moderate sum of three York shillings each. The chair was occupied by E. W. Thomson, Esq., the President of the Society; and we noticed several influential individuals, among whom we may mention, the Hon. W. B. Robinson, M.P.P., late Inspector-General, Wm. Baldwin, Esq., who occupied the vice-chair, J. Gamble, Esq., F. Boyd, Esq., Colonel McLeod, H. Y. Hind, Esq., of the Normal School, R. L. Dennison, Esq., Dr. Clark, Robert Cooper, Esq., Captain Shaw, &c. &c. The usual loyal toasts were most heartily responded to, including "*our noble Patron*," the Governor-General; Colonel McLeod responded to the *Army and Navy*. We copy the following, with one or two additions, from a city cotemporary.

The *Press* was introduced by the chairman with a few appropriate remarks. Mr. McDougall of the *Agriculturist* being called for, replied.

He said, he supposed he was called upon to reply to this toast in consequence of his connection with the *Canadian Agriculturist*, the only agricultural journal now published in Upper Canada. It was usual on occasions of this kind to speak of the mighty influence of the press, of its being a powerful engine for good or for evil, &c. &c.; but few persons who utter or listen to these trite observations, form any true or just conception of the real importance of, the gigantic influence possessed at the present day by that great civilizer of mankind. Think of those wonderful establishments at New York and London, which issue 30 or 40,000 sheets every day, sending every variety of intelligence to all parts of the habitable world. The newspaper press is not only the organ of the public will, but it sets it in motion, modifies it, and often executes its decrees. All men who exercise any influence upon the community read, and all men are influenced by what they read. The press in all free countries may be said to have usurped the place of government. How important, then, that it should be rightly managed. He then referred to the im-

portance of the press to the agriculturist. Why should not the farmer enjoy the advantage of an inter-communication of ideas and opinions of the details on his art—the most important of all the arts? Why should every other class in the country—the mechanics, the merchants, the religionists and politicians have their organs to disseminate their views and advocate their interests, and the farmer, to whom the knowledge of discoveries, experiments and science is no less important in his business, be without any press that he can call his own? This should not be. The farmers of Canada, if they wish to advance in wealth and intelligence, must support a press devoted to their interests. Science is daily revealing some new facts relating to agriculture, the knowledge of which is of the highest importance. The value of the press, when devoted to the farmer's interests, has been abundantly proved by the experience of other countries as well as our own. In the neighbouring Union every state has its Agricultural paper, and some can boast of two or three. Can it be possible that the farmers of Canada West are either unable or unwilling to support efficiently one journal? He hoped not. He trusted that as there was now but one published in this section of the province, which he believed would bear a favourable comparison with other publications of the same kind in any country, it would be generously sustained, not by subscriptions alone, but by the pens of the farmers. The agricultural papers that had been started at different times in Canada had met with slight encouragement, perhaps some of them deserved no more than they got. For his own part he could say that he had made nothing by his efforts to keep up a respectable paper for the benefit of the class from which he sprung—the farmers of Canada. It had up to the present time been, not his good, but his *bad* fortune to be connected with the agricultural press. But he hoped its greatest difficulties were overcome. A gentleman who was present, and would he believed reply to another toast, one who is eminently qualified to impart instruction on those points which involve scientific enquires, as well as those exclusively practical, was now connected with and interested in the *Agriculturist*. Those who had examined its pages during the present year could judge whether it is not creditable to our country and deserving of support. He thanked the meeting for the hearty good will with which they drank the toast.

The chairman then gave *The Agricultural Association of Upper Canada*, and connected with the toast the name of the Secretary, Mr. Buckland.

Mr. Buckland, in acknowledging the compliment, begged to thank the company for the honour they had done him by so cordially receiving his name in connection with the Provincial Association, an institution he thought, if properly managed and supported, eminently calculated to benefit the country. He regretted that he had done so little for the Society, which was owing more to a want of opportunity than of will, and expressed his desire to see the institution placed upon a broad and permanent basis, receiving the support of all parties. He was glad to find that the claims of the Society had been appreciated and liberally responded to by the government, by a grant which would soon enable the association to pay off its outstanding liabilities. Some complaints had been expressed in reference to the management of the late exhibition; it was an easy thing to find fault, and there were some defects in the Kingston arrangements that are not likely to occur again. The great desideratum, he thought, to be a uniform system of management. He spoke of the zealous and disinterested services of the executive committee, and the liberality of the city of Kingston and the Midland District in supporting the exhibition. Mr. Buckland thought that the society should at once publish a report of its proceedings. Little is known at home of the soils,

climate and capabilities of the country—as a member of the Royal Agricultural Society of England, he was in the habit of seeing, when in London, reports from the various Agricultural Societies in the West Indies and our southern colonies, but nothing from Upper Canada, the most important colony, in its agricultural and manufacturing resources, belonging to the British crown. He thought a well digested report, embodying facts which might be depended upon for their veracity, would materially improve the character of the emigration which annually reaches our shores.

Domestic Manufactures was spoken to by the Hon. W. B. Robinson, who could not see why he was called to speak to this toast, no man in the country having had less to do with manufactures than he. Mr. Gamble unfortunately had left, or he would have done justice to this subject. The honourable gentleman avowed his determination to exert his influence in support of native industry and manufactures.

The Lecturer was also proposed from the chair. Mr. Hind replied, thanking them for the honour they had done him. He expressed much satisfaction at being able to spend an hour in the endeavour to explain some of the principles of the farmer's art. He hoped he would have the opportunity of meeting them on future occasions, when the delivery of a lecture would become a regular part of the proceedings. After a few other appropriate remarks he sat down.

The Ladies were toasted, and Mr. Cooper returned thanks in a speech somewhat amusing.

A few other toasts followed, and the whole affair passed off remarkably well.

It is now quite evident that holding the exhibition occasionally out of the city of Toronto will be advantageous to the society, and, as a consequence, to the cause of agriculture in this important district.

DEATH OF THE REV. H. COLMAN.

Mr. Colman's labours in behalf of agriculture have been long continued, unremitting, and characterized by intelligence of the highest order. He at one time edited the *Genesee Farmer*, and is well known throughout the United States as one of their best and most voluminous writers on this subject. He was appointed Agricultural Commissioner to the State of Massachusetts, and went to Europe for the purpose of making a survey and report on the Agriculture of England, France, Germany, &c. His "tour" and other works have been recently published containing a vast fund of useful information. Just as he was preparing to return to his native country, and the day before he intended to sail death summoned him to another scene. He died in London on the 17th of August, 1849. We shall borrow hereafter from his writings; in the mean time we copy two or three extracts from his "*European life and manners*," which we find in an American paper. We will only add that Mr. Colman was equally distinguished for his benevolence of spirit, gentle and easy manners, as he was as an agricultural observer and author; wherever he went his company was sought both by the upper and middle classes, and his writings bear ample testimony that the poor shared a large portion of his attention and sympathies. His loss will be long felt in Europe as well as in

his native country. "The memory of the just is blessed."

NEATNESS OF ENGLISH WOMEN.

The neatness of the better classes of the English women is quite striking. The majority of them wear white stockings, without those dirty pantalets which you see bobbing about the ankles of our women, and they have too much good sense under an affected modesty to let their clothes drizzle in the mud; but they raise their skirts a little, and you will see them elegantly dressed, and walking through and crossing the muddest streets in the rain, and not a speck of dirt upon their shoes and stockings. I wish our ladies at home could take some lessons from them. Another thing shows their good sense. They all, in walking, wear pattens, or thick-soled shoes, as thick as cork shoes, or else galoshes. India rubbers are not seen. They have another practice which I greatly admire. They seldom wear false curls; but women whose hair is gray, wear it gray; and seem to take as much pains with, and as much pride in their silver locks as the younger ones do in their auburn tresses. I have met a good many ladies in company, but I do not find them to differ greatly from those I left at home, among the well-educated classes. Manners, however, are certainly much more a study than with us, and upon the whole make society much more agreeable; for they are not put on for the occasion, but grow up with them as matter of course. Every thing in society proceeds much more quietly than with us. From what I can see the English women must be excellent house-wives, as nothing can exceed the neatness and comfort of their establishments.

AGRICULTURAL IMPROVEMENTS IN ENGLAND.

Eight of us were mounted by our host at half-past eight o'clock, and off we galloped, a sort of steeple chase, with all the exhilaration of a fine day, and with capital objects in view. Our excursion was altogether agricultural; and our first visit was to a meadow, where by a moveable railway, large amounts of loam were to be removed on to peat or bog land, and the meadow brought into cultivation. The result of what had been done exhibited this as a successful and beautiful experiment. The object was—an experiment on a very bold scale—no other than the redemption of four thousand acres in one body of peat and bog meadow, into arable land; and this all undertaken by the capital and energy of one individual. On this place is the dry bed of an old river, filled with rich alluvial deposits. He has undertaken to excavate this bed of mud to the extent of eleven hundred feet in length, three hundred and sixty feet in width, and twenty-eight feet in depth; all of which is to be dug out and carried by railroads and cars to the necessary distance, and spread upon his meadows at the rate of eight inches in depth. He accomplishes four acres per day. This is an astonishing work, and will surely succeed, because many acres which have already been redeemed, present the appearance of very fine crops. The next object was several miles farther off, to see the process by which the waters of a very muddy river were made by dikes, &c. to overflow extensive tracts of land, in which there is left a deposit of eighteen inches of mud a year. This is called warping. These were, you may be sure, most interesting and valuable experiments, and prove what may be done for land, otherwise worthless, by skill, labor and capital; and show an extraordinary expenditure, which, in the end, fully remunerates the proprietor.

SCOTCH FARMS AND FARMERS.

You would be surprised at the extent of their farming. Mr. Oliver, the farmer with whom I dined on Wednesday, pays an annual rent of more than five thousand dollars for his farm, which he has on a lease of nineteen

years; and Mr. Finnie, whom I mentioned, has this year six hundred acres under the plough; both of them, though rich men, are only tenants. The tables of some tenant farmers, who are men of wealth, are covered with silver, and furnished with wines of the most costly character. They took me to visit the farm of a Mr. Hope, in their neighborhood, who also is a tenant, and who has made a fortune of sixty thousand dollars by farming. I never saw cultivation so fine as his farm, and the extent of his cultivation is absolutely immense. The farmers here are what we should call gentlemen-farmers. They never do the slightest work of any kind themselves; but, then, they are thoroughly acquainted with their business, and make it as much a matter of calculation and study as any professional man or merchant does his business. They have none of their laborers in their houses, and, in most cases, the laborers provide for themselves. You would be surprised to find how poorly they live; at least, we should think it so. They have oatmeal porridge and skim milk for breakfast; bread and potatoes for dinner, with beer; and porridge again at night. They cook their porridge for themselves, and, I was going to add, do their own washing.

CROPS IN ENGLAND.

In New England you hear nothing of the crops; in England you hear scarcely anything else. In the United States there is no dread, and not even a thought of a famine. In England the population increases at the rate of more than four hundred thousand per year; that is, more than the whole population of the city of New York; and how they are to be fed becomes a matter of great concern to every one. In England, likewise, the incomes of most of the people are limited, and they live up to them. They have no extra resources. They confine themselves to one business or pursuit; and if that fails, or the profits are diminished, they are reduced to hardships and distress. The price of bread affects the price of almost every thing else, and therefore becomes a matter of universal solicitude.

THE FRENCH FARMERS.

I was in the midst of the land of grapes, travelling for miles and miles, and day after day, through vineyards loaded with their products, and seeing hundreds and hundreds of men, and women, and children, gathering the most abundant harvest which has been known for years. I have never seen, so far as they have come under my observation, a more civil, clean, well-dressed, happy set of people than the French peasantry, with scarcely an exception; and they contrast most strongly, in this respect, with the English and Scotch. I seldom went among a field of laborers in England or Scotland, especially if they were women, without some coarse joke, or indecent terms; and seldom without being solicited for something "to drink your honor's health;" and never, especially in Scotland, without finding them sallow, haggard, bare-footed, ragged and dirty. In France it is the reverse; they are well clad, with caps as white as snow, or neat handkerchiefs tied around their heads; the men with neat blouses or frocks, and good hats. I have scarcely ever seen a bare-footed or a bare-legged woman in France; let them be doing what they will, they are always tidy; the address even of the poorest (I do not at all exaggerate) is as polite as that of the best people you find in a city; and so far from ever soliciting money, they have repulsed it in repeated instances, when, for some little service, I have offered some compensation. Count de Gourcy told me again and again, that even the most humble of them would consider it as an offence to have it offered to them. I do not believe there ever was a happier peasantry than the French; drunkenness is entirely unknown among them; and they are pre-eminent for their indus-

try and economy. I went into one field, with a large farmer, where there were nearly a hundred, principally women and children, gathering grapes, and I did not see one among them, whom I should not have been perfectly willing to meet at the table, or in any other situation.

I visited several plain substantial farmers, and several of the old nobility. They do not live in the same splendour as the English; they have not so many horses and carriages and servants; but they live elegantly. Their houses are most comfortable, and their tables are covered with more luxuries than I almost ever before saw brought together in the same abundance.

DEATH OF THOMAS BATES, ESQ.

This celebrated English Agriculturist is no more.—He departed this life at his old residence Kirkclevington, Yorkshire, after a short illness, on the 26th of July last, Mr. Bates has been well known in the agricultural world for more than half a century, and was widely esteemed as an honourable and upright man. Many of our readers, especially those from the old country, are well aware that Mr. Bates held through a long life a prominent and well sustained position as a scientific breeder, especially in the department of short horn cattle—his extensive herd being distinguished for purity of blood and the most perfect combination of the characteristic points and qualities of that celebrated breed.—The world renowned reputation of his *Duchess* herd of short horns needs no advocacy at our hands. That blood has been known for years both in Canada and the United States. Mr. Vail of Troy, and Mr. Sherwood of Auburn, may be instanced as possessing it; and among ourselves we may mention the Hon. Adam Fergusson, and Mr. John Wetenhall; and we may just call the attention of our readers to a letter on this subject from the former gentleman, that appeared in our last number.

PLOUGHING, &c.—*Friend Holmes*:—Some days since, I had the pleasure of a few hours' ride in the cars, with that Prince of Agriculturists, the Hon. H. L. Ellsworth, of Fayette, Indiana. I was not only amused but much instructed by his conversation, and the information imparted—one piece of which, I give you for the benefit of your friend, "a Down East Farmer," and others who may wish to adopt the most economical method of ploughing. Mr. Ellsworth, by attaching the plow-beam to an axle of a pair of low wheels, in such a manner as to keep the colter perpendicular, is enabled to entirely dispense with the service of a plowman. And as one of the wheels or one of the cattle may be made to go on the furrow, a mere lad can drive the team—a saving of labor of great importance to a man who frequently has ten plows, or more, in the field. If one plow can be connected with the axle, why not two? Enlarge the team and save the labor of another teamster.

This is the gentleman who, this year, raised a thousand acres of corn, which will average quite fifty bushels per acre. He has now in the field, twelve hundred hogs, eating it up, fattening themselves, and preparing the land for wheat. The next season, he will put one hundred acres into flax seed. His crop this year produced him seventeen bushels of seed per acre. It would seem that his method of plowing might be adopted on much of the lands in Maine.—*Maine Farmer*.

THE PLOUGH.

NO. III.

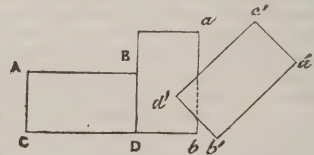
In the first and third numbers of the *Agriculturist*, we made some remarks on the *plough*, relating chiefly to its history and construction, with a glance at the nature and extent of the improvements to which it has been subjected in modern times. We intended to have continued the subject in the successive numbers, until all the important points had been considered. But in consequence of the great fire of last April, which destroyed the office of our publishers, and consumed several of our books and papers, and the cuts which we had prepared for the illustration of this subject, it was dropped. Looking back to the conclusion of our observations, in No. 3 of the *Agriculturist*, we find it stated that "we shall proceed to consider the scientific principles which it (the plough) is supposed to involve, and in accordance with which its form is regulated amongst ourselves." We therefore have procured the necessary cuts a second time, in order to fulfil this promise. We had in view, when we began the subject, an examination of the principles and various modes of *ploughing*, as well as the character and construction of the implement; but as this is a very important branch of the subject, and as we shall have something to say upon it in connection with the Provincial Exhibition of next year, we defer the expression of our views upon ploughing until we get into our second volume.

The following remarks and illustrations are the best we have met with on the *principles* of the plough. We find them in the "Farmer's Dictionary," being copied, we believe, from a work by the Rev. W. Rham, an English agricultural writer of high standing. The remarks are so clear and so much to the purpose that we insert them without comment.

The mould-board of a modern plough, says this writer, is either fixed on one side, or made to be shifted from one side to the other, or there are two mould-boards. In the first case, one half the furrow slices lie on one side, and half on the other, and there is of necessity a double furrow where they join. When it is desirable that the surface should be quite flat, and the furrow-slices all in one direction, the mould-board must be shifted at every turn, and a plough which admits of this is called a turn-wrest plough, or there must be two boards. The form of the turn-furrow is of material importance, for on this depends not only the performance of the work, but also the lightness of the draught. When we follow a plough working in a mellow soil which slightly adheres to the plough, we often perceive that, instead of being turned aside, the earth is carried forward, and only falls off when the accumulation of it becomes heavy enough to overcome the adhesion. It does not slide off from the mould-board itself, but separates from the earth which adheres to the latter; thus shewing that the shape is defective, and giving good hints for its improvement. But as the same plough will sometimes turn over the same earth better when it is either drier or moister, it is very difficult to determine, by experiment only, what may, on the whole, be the best shape. A little reflection and the application of scientific principles may greatly assist us here. It is not sufficient, however, to find the curve which will make the plough go through the ground with the least

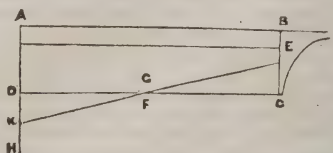
force. The plough must also perform its work perfectly, and if anything is to be sacrificed, it is better to employ more power than to plough the ground badly. After having ascertained the mechanical principles which bear on the working of the plough, we must observe its action carefully, follow the plough day after day, in different soils and different weather, and thus we may be led to observe all the circumstances which attend its operation, and correct any mistakes which an erroneous theory might have led to.

Many attempts have been made to ascertain the exact curve which the turn-furrow should have to perform the work well, and at the same time to produce the least resistance. The difficulty of the problem lies in determining the data, or principles on which the investigation is founded; and these are so various that it is not surprising that no very satisfactory conclusion has yet been obtained. We will make an attempt at a solution from a simple examination of the motion to be produced in the portion of earth to be turned, which we call the furrow-slice. We shall suppose this separated from the adjacent soil by the vertical cut of the coulter, and, at the same time, from the subsoil by the horizontal cut of the share: a section of the slice, by a plane at right angles to the line of the ploughing, will be a parallelogram $A B D C$ the depth, $A C$, being the thickness

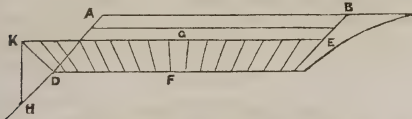


of the slice, and $A B$ its width. Confining our attention to this section of the slice, the object is to move it from its position, $A B D C$, as cut off by the coulter and share, to that of $b' d' c' a'$, where it is inclined at an angle of 45° to the horizontal line, the surface $A B$ ($b' a'$), being laid on the slice previously turned over, so as to bury the grass or weeds which might be rooted there, exposing the roots to the sun and air. The more uniformly this motion is produced, and the more regularly the successive sections follow each other, the less power will be required to turn over the whole slice. The motion of $C D$ round the point D must therefore be uniform. If the turn-furrow is horizontal at the point where it joins the share, and of the same width as the furrow slice, it will slide under the slice; and if the vertical sections of its upper surface, at equal distances from the share, are inclined at angles regularly increasing with this distance till it arrives at the perpendicular, the turn-furrow will, as it advances, turn the slice from a horizontal to a perpendicular position; the section of it will then be $D a b$. The inclination of the section of the turn-furrow must now be to the other side, forming an obtuse angle with the section of the sole, until it has pushed the slice over at the required inclination of 45° , which theory and experience have shown to be the best adapted to expose the greatest surface to the action of the atmosphere, and likewise to form the most regular furrows for the reception of the seed, which the harrow can then most readily bury.

The surface of this turn-furrow is curved in the form of the spiral thread of a screw, such as would be



generated by a line moved uniformly forward in a direction at right angles to its length, while it revolved uniformly round one of its extremities. This surface is easily constructed mechanically, thus: take a rectangular parallelogram, A B C D, of the width of nine inches, or as wide as the intended furrow, and of a length equal to four times the width. Bisect B C in E, and D C in F; at F raise a perpendicular F G to the plane of the rectangle, and make it equal to C E. Join E G and produce it to K, making F K equal to F E. Join K D. Draw from every point in C D lines at right angles to C D, meeting the line E K in different points: these lines will form the required surface. The line K D will be found inclined 45° to the horizon, at the angle K D H, which is the inclination at which the furrow-slice is most advantageously laid. To those who are not familiar with solid geometry, these lines may be easily exhibited, by means of a wire inserted at E, and bent at a right angle at K, inserting the bent portion into the

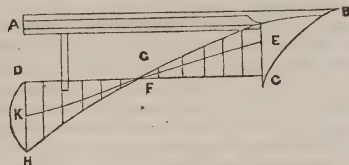


board A B C D at D, so that it will be inclined 45° at D, lying in the direction of E K. Care must be taken that G F be equal to C E, and perpendicular to the board.

It is evident that, as the plough moves on, a particle at E will slide along the line E K, become at G perpendicular to the bottom of the turn-furrow, which should be parallel to the sole, and at K be at an angle of 45°

with that line. If the slice were a solid substance, this line, E K, would be all that is required to turn it in its proper position; but as the soil is generally loose, and would crumble to pieces, a support must be given to it by a surface at least as wide as the slice. This surface is generated by drawing lines from different parts of D C at right angles to this line, and meeting the line K E. These lines will be at different angles to the

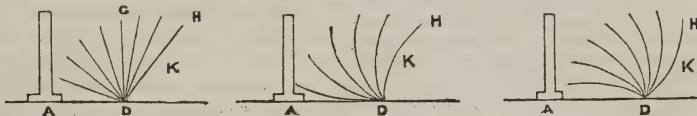
Horizontal Plan of the Plough.



A B, the Sole. C, the Fin. D C, the bottom of the Turn-furrow.

horizon, nearly horizontal at C, where the fin of the point begins, perpendicular at F, and at 45° beyond it at D. The curve thus generated will be found to turn over soils of a moderate tenacity very perfectly. If it is very light, the surface may be formed by arcs of circles with a considerable diameter, the concave part upward; if it is very tenacious, the convex part of the arches may be upward. Thus the surface may be varied without altering the fixed line E K. The annexed figures will explain this. The distance of the perpendicular F G from the fin of the share may also be varied, either lengthening or shortening the turn-furrow as experience may show to be most advantageous.

Sections of the three different Turn-furrows, at different distances from the Heel.



A plough has lately been constructed on this principle; it promises to realize the expectations formed of it. In soils of a loose, mellow nature, it answers completely, and does the work more perfectly than any other plough. It unites the parallelism of the sole and bottom of the turn-furrow of the Flemish plough with the improved shape of the turn-furrow. By adopting the variations in the shape of the turn-furrow which we have suggested, this plough may be adapted to any soil, and be used with or without wheels.

Ploughs were formerly made of wood, having those parts covered with iron where the greatest friction takes place, the share and coulter only being of iron; but in consequence of the greater facility of casting iron in modern times, most of the parts are now made of this metal. The beam and stilt are still usually of wood, but even these are now sometimes made of wrought iron and cast iron. The advantages of iron are its durability and the smaller friction it occasions when once polished by use. The inconveniences are the additional weight of the instrument, and consequent greater friction of the sole. Recent experiments have proved this to be greater than was generally suspected. A great improvement has been introduced by making the points of the shares of cast iron, which, by a mode of casting the lower surface on a plate of metal, makes one surface much harder than the other; and as the softer surface wears more rapidly, a sharp edge is always preserved.

The stilt of the plough are mostly of wood. Where the soil is light and crumbling, without stones, a single

handle or stilt is sufficient; but where some force is occasionally required to prevent stones or other obstacles from turning the plough out of its course, two stilt are most convenient, placed at a more obtuse angle with the sole of the plough.

The force required to draw a plough depends not only on the nature of the soil, but also on the shape of the plough, and especially on the position of its different parts with respect to each other, so that they do not counteract each other.

If a plough were drawn in the direction of the sole, the obliquity of the turn-furrow would cause it to turn towards one side, and it would require a considerable force to keep it straight. In order to prevent this, the line of draught is placed at an angle, which varies with that of the turn-furrow and the force required to push the furrow-slice over. To adjust this angle, so as to cause the plough to keep in the intended line, there is a contrivance at the end of the beam to change the position of the ring, by which the plough is drawn to the right or left of the line of the beam, and another by which it may be raised or lowered. In most ploughs the beam, having been originally set at a small angle, with the sole towards the right, has an arch of wood or iron at the end. The end of this iron, which is called a bridle or clevis, has several projecting hooks in the oblong curve which terminates it, on which an iron ring is hung at different heights. By these contrivances the plough may be drawn from a point on either side of the beam, and higher or lower, as may be required. When the plough is found to take too much land, as ploughmen

say, that is, tends to increase the width of the slice cut off by the coulter, the bridle is shifted to the left by moving the pin into another hole; when it goes out of the land, as it is called, that is, diminishes the width of the furrow-slice, the pin is moved a hole or two to the right, until the plough has no tendency to deviate to either side. If it inclines to rise out of the ground, the ring is shifted in the iron bridle, and placed in a hook or notch higher up; if, on the contrary, it dips too deep, the ring is hooked lower. Thus a plough may be made to go straight and at a regular depth, without any more force being applied to the stilts than is required to counteract inequalities in the land, or accidental obstacles, such as stones or roots, which might throw the plough out of the ground. When the soil is of unequal texture, it is useful to have a small wheel connected with the fore part of the beam, so as to prevent its dipping downward, which would require a great pressure on the stilts to keep the point of the share up, and thus increase the friction of the sole on the ground, and, consequently, the labour of the horses. In the Rutland plough, two wheels are connected with the beam, one of which runs in the furrow to the right, and the other on the unploughed soil to the left. When the plough has been well adjusted, and the larger wheel runs in the angle of the furrow, it acts as a gauge to regulate the width of the slice, as well as its depth; in very uniform soils without stones, the plough, when set in the proper direction, will make a very straight and even furrow, parallel to the one in which the wheel runs, without any person holding the stilts; so that all that is required is to turn the plough at the end of each furrow, and set it into the proper line to form the next. As this admits of a very correct adjustment, no unnecessary force is required to draw the plough, and hence this plough appears to be the easiest for the horses; and if the wheels are not very heavy, and the plough is of a good form, it certainly requires less power to move it than many which are without wheels. There are some very irregular and stony soils, where a common swing-plough can scarcely be kept steady without the help of wheels, and where it would not be so convenient to have the beam fixed on the wheels. In this case, a separate carriage is necessary, that the ploughman may have a fulcrum on which he can raise his plough, or turn it to either side to avoid any considerable stone or other obstacle. As a general rule, it may be safely asserted that a slight but strong swing-plough, in the hands of a clever ploughman—with one wheel in particular soils, but, in general, without any wheel—will effect its purpose with the greatest precision, and the least exertion of the horses drawing it. Theory and practice agree in this; and if any experiments appear to throw a doubt upon it, we shall probably find some circumstances which have influenced the result, when wheel-ploughs have appeared to require the least power of draught. But wheels have one advantage—they will enable an inferior ploughman to make better work than he could possibly do without them; and that, too, with less labour to the horses, because, from his want of skill, the swing-plough would be continually subject to sudden deviations, requiring him to use his strength to counteract them; and each exertion of the ploughman adds to the labour of the horses.

The numbers in the following table show the comparative draught of the same ploughs in different soils; they are from Mr. Pusey's experiments:

Trial 1. Sandy loam.....	17½ stone.
" 2. Clay loam.....	47½ "
" 3. Loamy sand.....	16½ "
" 4. Strong loam.....	31½ "
" 5. Clay loam.....	28½ "
" 6. Moory soil.....	20 "

"Without entering into any comparison of ploughs differently constructed, it is evident that the shape of

the plough must vary with the nature of the soil which it is to turn up. A light soil must be shovelled up; a mellow one may be turned over with any kind of mould-board; a very stiff, tenacious soil, which adheres to any surface pressed against it, will be more easily turned over by a few points of contact which do not allow of adhesion. Hence the point and turn-furrow have been made of all imaginable shapes, and while one man contends for a very concave form, another will admit of nothing which is not very convex. That plough will, no doubt, have the least draught which is best suited to the soil which it has to move. The lighter the plough is, consistently with sufficient strength, the less draught it requires, all other circumstances remaining the same. Lightness and strength combined are, consequently, great advantages, and if a very light plough does its work as well as a heavier, there can be no doubt that it is preferable. Durability is nothing compared with the saving of one horse in three; it is cheaper to have a new plough every year than to keep an additional horse all the year. If a wooden plough is found to be more easily moved than an iron one, there can be no doubt which should be preferred.

A MUNIFICENT PROPOSAL.

We learn from the *Journal of Education*, that the Chief Superintendent of Schools for Upper Canada, has received a communication from a gentleman in England, generously offering a special sum of money, to be placed at Dr. Ryerson's disposal, for the noble purpose of opening 500 new schools in the western portion of the province, "for a sound religious and scientific education." Agriculture, it is suggested, should form a part of the routine of study to be pursued in those schools. Sincerely do we hope, that so valuable and patriotic an object may be realised. If we were to enter upon a tour of agitation, our motto should be, EDUCATE, EDUCATE, EDUCATE. For upon "a sound religious and scientific education" depend alike the happiness of individuals and the prosperity and safety of the state.

FIFE'S SPRING WHEAT.

Otonabee, Colborne District.

To the Editors of the *Agriculturist*.

MESSRS. EDITORS,—One of our farmers having been so fortunate as to introduce a new kind of wheat into this township, of which a brief notice was given in the *Cobourg Star*, 12 months ago; I trust a more full account of it may not be unacceptable to your readers, as from its tendency to resist the effects of rust, and its adaptation to low black soils; it requires only to be known to be extensively cultivated and highly valued.

Eight years ago Mr. David Fife having a friend about to revisit Scotland, requested if an opportunity occurred, that he would forward to this country a small quantity of wheat from some of the northern ports of Europe. On landing at Glasgow he found a vessel discharging a cargo from Dantzic; having procured a portion, he sent it to Mr. Fife, who sowed it the spring following, and it came up various kinds, as might be expected, and the whole was affected by rust, except this variety, of which there was but five ears, and two of them were destroyed by cattle, yet from the remaining three ears he raised the third year half a bushel; from the produce of this he supplied some of his friends with a few bushels, and it began to be noted for not rusting, and one person had twenty-eight bushels from one bushel sown. Next year the Agricultural Society introduced the Club

wheat as a change of seed, which being sown along side of the new wheat in many instances, and the former being rusted so as to be worthless, while the latter was not the least injured; so established became its superiority that last spring the Agricultural Society thought it advisable to purchase 260 bushels to distribute amongst its members, rather than it should be taken out of the township, and the principal holder of the wheat refusing to take less than two dollars a bushel for it, that price was given by the Society, and many bushels were sold to the neighbouring townships at the same rate, many people applying for it in vain.

It is rather a late kind of wheat being 8 or 10 days behind the Club or Siberian, if sown at the same time, and this scorching summer has not suited it so well on dry soils, but on low black-ash swards and any similar place, not too wet for wheat to vegetate, it succeeds well, and its bright yellow appearance confirms the application of "*The Golden Grain*" so often applied to wheat, though perhaps some of your readers may think that the price paid for it gives it a better claim to that title.

A sample of the wheat shown by Mr. James Fife obtained a prize at the Provincial Exhibition last year, and a specimen will accompany this letter, together with an advertisement, which, by your giving publicity to, will oblige

Your obt. Servant,

HENRY BAWBELL,

Sec. Otonabee & Ashhpodel Agr. Society.

October 12th, 1849.

[A sample of this wheat may be seen at our office. It seems to be pure, and the quality is good. From what we have heard in different quarters, we consider it well deserving the attention of wheat-growers, particularly such as have low or wet land.—EDITOR AGR.]

STATE FAIR AT SYRACUSE.—The Ninth Annual Show and Fair of the New York State Agricultural Society took place at Syracuse, on the 11th, 12th, and 13th of September. Considered as a whole, the display may be said to have surpassed those of former years. The people were out *en masse*; the number which entered the show-grounds could not have been less than sixty-five to seventy thousand.

The receipts for tickets and memberships, were eight thousand fifty-five dollars and fifty-five cents. The assemblage was gathered chiefly from our own State, though there were thousands from the various sister States, from Maine to Texas, and from the Canadas.

This association is evidently exerting an important influence—an influence which is not only felt throughout the whole of our own country, but is even affecting our national relations. It is opening and cultivating an acquaintance abroad, which cannot fail to be favorable to the promotion of peace, and a proper regard for our character as a people. At home, its annual exhibitions are justly looked upon as the most important gatherings of our citizens. On these occasions, men of all sects and parties mingle harmoniously together, mutually ardent for the advancement of a common object—the real prosperity of the country. Here friendships are formed by which party and personal animosities are worn away, and the people are brought to look, unbiased, at those principles which concern their welfare.

The show-grounds were well situated. They were on a hill of sufficient elevation to give a fine view of the surrounding country, embracing an area of twenty-five to thirty miles. The field, which contained upwards of twenty acres, had some inequality of surface, but not more, perhaps, than was favorable to general picnicking.

As at Buffalo, the cattle were placed in a grove, where they were protected from the scorching heat of the sun. The general arrangement of the classes was very convenient, and does much credit to Messrs. Sotham & Fuller, who had charge of this department.—Stalls were provided on the ground for about seventy horses, but from the great number exhibited, it was impossible to accommodate in this way but a small proportion of the whole.

We have only room at present for the following notices:

Of *Horses* there were fine specimens of the different classes; but as the writer was closely engaged in other departments, he had not an opportunity of seeing all the animals exhibited.

The *Cattle* were more numerous, and in general of better quality than have ever before been offered at our shows. The greatest display was by the Devons. The short-horns were better, on the whole, than at our shows for several years past. Comparing the different classes, we think the Herefords and Devons were more evenly good than the Short-horns, though among the latter there were some splendid animals.

The fat cattle were numerous, and generally excellent. A fine pair of Durham oxen, five years old, weighing 5,000 lbs., were shown by Mr. Sheldon of Sennett, Cayuga county; a fine pair of the same breed were offered by Mr. Rone of Mount Morris, who also exhibited two remarkably fat cows, nearly full blood Durhams. Mr. Leach, of Eaton, Madison county, showed a very fine cow, four years old, weighing 2100 lbs., a cross of the Durham, and a pair of large oxen. Mr. Nowlan, of Sennett, showed a pair of cross-bred Durhams, six years old, weighing 5236—very fat. Mr. Doty, of Wyoming county, showed a very large pair of red oxen, one of which was a very fine animal. A three year old Durham heifer, offered by Mr. Barber, of Cortlandville, attracted much and deserved commendation. She is an animal of uncommon symmetry, and was not excelled in the essential qualities of a *grazier* by any animal on the grounds.

Sheep of all classes were well represented.

The show of *Swine*, though better than that of some years, was not equal to the best.

Dairy Products were less in quantity than at Buffalo; but the display was, notwithstanding, creditable in extent; and we learn from the committee having charge of this department, that the quality of the butter and cheese was generally excellent. We observed that there was considerable competition from the principal dairy districts in this state, and there were several samples of cheese from Ohio.

The *Implement Department* was admirably filled, forming a display exceeding anything of the kind which we have ever before seen.

The *Plowing Match* was contested by eighteen teams. The writer was not present at the match, but from having seen the ground after the work was done, is enabled to say that it was done in a manner superior to that of any he has before witnessed at the matches under the auspices of the society.

"*Mechanics' Hall*" was filled with a multitude of articles, to notice all of which would require much more space than we can spare. We noticed a "*Dairy Steamer*" for warming and heating milk in cheese-dairies.—Certificates in relation to its operation stated that steam sufficient for warming the milk of sixty cows can be got up in thirty minutes. It appears to be a useful article. It was exhibited by J. H. Bushnell, Utica.

In the *Fruit and Floral Department*, the display was less extensive than in some former years, especially in flowers, which, from the unprecedented drouth which has prevailed in the central and western portions of the state, have not developed themselves in their usual per-

fection. The size and quality of the fruits, too, have been affected by the same cause. Still the fruits exhibited, were mostly of a good quality and fine appearance.

The Address by Prof. Johnston was listened to by a very large audience, and was received with much approbation. The subject-matter consisted of two principal divisions. The first, embracing a general view of the agriculture of the different countries of Europe; and the second a brief exposition of the principles of agriculture and its connection with the sciences. It was a document of considerable length, and occupied upwards of an hour in the delivery; but the deep interest manifested by the people in the beginning was maintained to the last, as was indicated by the hearty cheers which greeted the speaker at the close. In a word, it may be said that the high reputation which Prof. Johnston had acquired among our people, through his writings, was fully supported by the address; and we cannot but flatter ourselves that the impressions by the first acquaintance have been mutually favourable.

Among the distinguished visitors at the fair, were Hon. Henry Clay of Kentucky, Vice-President Fillmore, Gov. Fish, Ex-Gov. Marcy and Lieut. Gov. Patterson, Hon. Frs. Granger of New York, Gen. Wool, Hon. Mr. Clingman, M. C., from North Carolina, Hon. H. L. Ellsworth of Indiana, and numerous delegates from the Canadas and the Agricultural Associations of the different states of the Union.—*Albany Cult.*

STATE OF THE CROPS IN THE OTTAWA DISTRICT FOR 1849.

From the Report of the Ottawa District Agricultural Society.

MR. PRESIDENT.—Agreeably to your request we send you a brief report of the general state of the crops throughout the country that we have travelled.

The early sown wheat is more than an average crop; but the late sown rather less. The latter, though not inferior in quality, will probably yield from 20 to 30 per cent. less in bulk. Peas are scarcely an average, though we saw some excellent samples. In general they have been injured by drought. Hay is not one half the average crop; and oats not much better. There is little barley sown, and the samples shown were nothing extra. The same observations are applicable to the rye. Corn is not such an abundant crop as last year; neither has it ripened so early—still it is about an average. The potatoes are about half an average; but we found not a single rotten one—there has been a good many planted. Turnips are very promising, and there are a good many sown. Fruit trees appear to be well loaded, but owing to the extreme drought apples particularly are small.—The same remarks may apply to garden vegetables of every sort.

On summing up the state of agriculture generally in the County of Prescott, we are happy to be able to bear testimony to the growing prosperity of the farming interest, and to state that although oats, hay and potatoes are not so abundant as in some former years, the quality of all kinds of produce is good and the prospects of the farmer for the present season are flattering.

We are, dear Sir,

Your most obedient servants,
JAMES WHITCOMB,
JAMES CROSS,
JOHN CROSS.

Chs. P. Treadwell, Esq.,
President.

Ottawa District Agricultural Society for Year 1849.

Pride emanates from a weak mind; you never see a man of strong intellect proud and haughty.

VALUE OF SHRUNK WHEAT.—We call attention to the following table of the relative value of shrunk wheat, and think it may be useful to those of our readers who have that kind. The quantity of shrunk wheat in the country renders the adoption of some *fair scale* necessary as a *standard*. Much useless alteration may thus be saved when the scales of wheat are made.

The millers of Zanesville and other parts of the Muskingum Valley, in view of the depreciated quality of the wheat crop the present year, have published the following scale of prices by which they will be governed in purchasing. They say:

"The scale of prices will vary as the standard price of good wheat varies in the market. It is manifestly the interest of the farmer under this arrangement, to render his wheat clean and as free from dirt as possible, for as he increases the weight he also increases the price. Wheat weighing *below* fifty pounds to the bushel may be purchased as the buyer and the seller can agree about price and quality.

"Assuming that cleaned wheat weighing 58, 59, and 60 lbs. to the bushel is worth 75c. per bushel, wheat

weighing 57 lbs. would be worth.....	74 cents
" 56 " " " " " " " " " "	69 "
" 55 " " " " " " " " " "	66 "
" 54 " " " " " " " " " "	62 "
" 53 " " " " " " " " " "	58 "
" 52 " " " " " " " " " "	53 "
" 51 " " " " " " " " " "	48 "
" 50 " " " " " " " " " "	42 "

"For white wheat, 10 per cent. additional will be allowed on the above prices."

It will be seen from the above scale that wheat weighing below fifty-four pounds to the bushel depreciates from the standard price in greater proportion, owing to the fact that flour cannot be made from these inferior qualities of wheat that will pass inspection as *superfine*.—*Ohio Cultivator.*

KEEPING HENS.—Mr. J. M. Mason, of Orwel, Vt., usually winters two hundred hens. His practice is, to buy pullets in the winter. They cost about twelve and a half cents each. They are fed in a great degree on *mutton*. Mr. M. buys sheep in the fall at low prices—about what their pelts and tallow are worth. The carcasses are boiled, the tallow saved, and the flesh and bones, after being allowed to freeze, are kept till spring,—a suitable portion being fed to the hens daily. They are allowed, in addition to the meat, a little corn, oats, or buckwheat. They lay well through the winter—comfortable quarters being provided for them—and continue to produce eggs in abundance till June. It is found most profitable to sell the whole stock at this period, as they are generally fat, and will bring from twenty to twenty-five cents a-piece. If kept through the summer, they lay but little in the warm months, the eggs will keep but a short time, the fowls grow poor in moulting, and if kept another year will not lay as well as young ones. Mr. M. keeps hens only, and is inclined to think he obtains as eggs, and that the keep better. As to varieties, he has tried several, and thinks the *top-knots* will generally lay rather more eggs the first season; but these carcasses are of less value than most other kinds.

A poet finds in the simplest flower that blows, a volume of contemplation; the scattered leaves present him with lessons of morality; he hears the voice of God in the wind. He penetrates the mysterious meanings of all that meets the mortal sense, and his sympathies of thought which never yet were uttered in words.

Horticulture.

NORTH AMERICAN POMOLOGICAL CONVENTION.

We learn from the October number of the *Horticulturist*, that the annual meeting of this Convention was held at Syracuse, during the week of the New York State fair, and was a very satisfactory one. It appears that this society, and the *American Congress of Fruit Growers*, which held a meeting in the city of New York, Oct. 2nd, are from henceforth to be united. This seems to be a most desirable result. It has been resolved that the next meeting shall be held in the city of Cincinnati, during the autumn of 1850; the meetings to take place afterwards biennially; the session for 1852 to be held in Philadelphia. It will be seen that Canada is efficiently represented in the person of Mr. James Dougall, of the Rosebank Nurseries, Amherstburgh, who occupies a distinguished position in the Convention.

We take the following from the *Horticulturist*.

This is the second session of this convention, and was well attended. The display of fruit, though not extensive, was still very fine.

The meeting was called to order by James Dougall, of Canada West, who nominated Col. Benjamin Hodge, of Buffalo, as Chairman. On motion of Dr. Herman Wendell, Mr. M. B. Bateham, of Ohio, was appointed secretary, *pro tem*. The call for the convention was then read by the secretary, and a committee of five appointed to nominate permanent officers.

On motion, all gentlemen were invited to sit as members, who felt an interest in fruit culture.

The committee consisted of the following gentlemen: N. Goodsell, F. R. Elliott, Chas. Downing, A. Bryant, and J. W. P. Allen.

The convention took a recess.

After being called to order by the chairman, the secretary called a list of the names of the members of the convention, which we must omit for want of room.

The committee on nominations, reported the following gentlemen as permanent officers. The report was adopted.

For President, Dr. J. A. Kennicut, of Ill.
1st Vice-President, James Dougall, of Canada West.
2nd do. Dr. Herman Wendell, N. Y.
3rd do. C. M. Hovey, Mass.
4th do. M. B. Bateham, Ohio.
5th do. H. P. Byram, Ky.
6th do. James G. Mapes, N. J.
Secretaries—F. R. Elliott, B. Hodge.

The president on taking the chair, thanked the convention for the honour they had done him.

The report of the committee on organization, was received, read and accepted. The report contained the rules for the society, and the appointment of a committee on seedlings, which appointment was made by the president.

Reports from New York, Vermont, Pennsylvania, Michigan, Illinois and Ohio, were received.

The president suggested that the committee proceed at once to the examination of fruits, as they were perishable articles.

Dr. Herman Wendell, of Albany, offered a preamble and resolution in reference to the consolidation of the two conventions, so that but one meeting might be had in a year, which was adopted. The president appointed a committee for the purpose of conferring with the other

society. The following is the preamble and resolution.

Whereas, The National Pomological Convention, held at Buffalo, in September of 1848, under the auspices of the N. Y. State Agricultural Society, composed of Delegates of 15 States and the two Canadas was the first general convention of such character ever convened in the United States, and whereas that convention unaniously resolved, that hereafter an annual convention of like character should be held under the title of the North American Pomological convention, that the first meeting with that title should be held in the autumn of 1849, at the place where the great fair of the N. Y. State Agricultural Society was to be held, and on the day succeeding the close of the said fair, therefore, we consider this convention entitled by courtesy to perpetuate itself; but being aware that a convention of an analogous character was held in the city of New York in the autumn of 1848, and the said convention organized itself into a permanent association under the title of the American Congress of Fruit Growers, which is to assemble in said city of New York, on the 2nd day of October next, and believing that the advancement of Pomological Science, as well as the inclination and interests of Pomologists throughout this continent, will be best promoted by a merging of the apparent conflicting association into one general organization for future operation, therefore, be it

Resolved by this convention, that a committee of five be designated by its president, whose duty it shall be to attend the coming session of the American Congress of Fruit Growers, and confer with the said Congress or a committee whom they may select in relation to the meeting of the two associations, and as far as this convention is interested, the settling of questions of priority of organization, places of next meeting, and title of association, shall be left to the committee whom the two organizations shall appoint, and that we will exert ourselves to induce a general attendance of those interested, wherever the joint committee determine the next convention shall be held, but we cannot omit giving it as our opinion, that the cause of Pomological Science will be most promoted, and the feelings of the great mass of Pomologists best satisfied, if the next meeting should be held at Cincinnati, or some other western city.

The President then named Dr. Herman Wendell, Prof. James G. Mapes, F. R. Elliott, Chas. Downing, and Dr. A. Kennicut, as the committee.

Syracuse, Sep. 14.

THE CANADIAN COFFEE PLANT—ITS CULTIVATION &c.

Having long been of opinion, that a very great amount of money was annually sent out of this Province for articles of foreign growth, which with a little exertion might be produced by ourselves, in reference to which my attention was more particularly directed to the article of Coffee.

Various substitutes for this have frequently been tried, but hitherto nothing satisfactory has been discovered.

I had for several years cultivated in my garden a plant called the Coffee Plant. I was induced from the name to try it as a substitute for the tropical plant, and found it very much resembled it in flavour, but conceived that if more care was taken in its cultivation it was capable of much improvement both in quantity and quality. I have accordingly for the last two years taken considerable pains to improve it, and I trust with some success, the result of my labours I now most respectfully lay before your society.

The seed when I first procured it was smaller, and much inferior in flavour, and the produce not one sixth what it now is; still I was reluctant to draw public attention to it, until by repeated experiments I came at

last to the conclusion to adopt it as an entire substitute for coffee, as far as I was concerned.

The mode of cultivation I pursue is as follows:—In the fall, plough over a piece of rich land, if possible that which has just been cleared of potatoes, ploughing in as much well rotten manure as I can spare, as like Indian corn land, it cannot be too rich: early in the spring I again plough it very slightly, and harrow it till the mould is as fine as possible; I then divide it into beds from ten to twelve feet wide, and as long as the piece of ground. I procure a board in length equal to the width of the bed, and 12 inches wide, graduated on both sides every 12 inches. I lay this board across the bed, and standing on it, open with a small stick a shallow drill by the edge of the board; the seed, which has previously been steeped in water 12 hours, is then dropped in by hand, one grain only every 12 inches, the drill then closed with the edge of the stick I opened it with; then stepping into the alley, carefully turn over the board. Again, make another drill, planting and covering as before. By this means the plants will stand 12 inches apart each way, and if care is taken to use only good seed, by rejecting all which floats when steeped, almost every one will come up; should any blanks appear, I fill them up on a wet evening, from a small bed I sow in a corner.—All that is afterwards required is, to keep them clear of weeds with the Dutch hoe during summer, and when full grown by July, they completely cover the ground. About the middle of September I get some children to commence picking the ripe pods, which may be continued till the end of October or the beginning of November, as they do not all ripen together, they are then thrashed out and cleaned like other peas, but as they do not part from the hull so easily, some method must yet be devised, with rollers or otherwise, to shell them out quicker. The average return is about from two to four hundred pods from one grain, the plant herewith exhibited had about 370 pods when lifted.

In conclusion, Gentlemen, I beg leave to submit the above for your consideration, trusting, that should you consider it worthy of your patronage, you may award such extra prize as you may see meet.

I remain, Gentlemen,

Yours most respectfully,

WILLIAM MARCH.

To the Directors of the Provincial Agricultural Society.

[From a slight inspection of a dried specimen, we are inclined to conclude that the plant called above "the Canadian Coffee Plant," belongs to the vetch tribe, and it is said to be indigenous to this country. Mr. March received the Society's Diploma for exhibiting it at the Kingston Show, and we believe he is prepared to furnish the public with seed. We hope its cultivation will be fairly tested, likewise its qualities as a beverage, that the public may be satisfied in regard to its being of a nutritious character.—EDS. AGRIC.]

ON THE DISADVANTAGES OF DEEP PLANTING TREES.

From the Horticulturist.

An impression obtains among American gardeners, that trees should be planted deeper in this country than in Europe, on account of the greater warmth of the summer season. This impression is erroneous; it can only have arisen by imperfect observation, as it is opposed alike to comparative experiment and to every known principle of vegetable physiology.

Were not wonder and astonishment incompatible with the character of a wise man, one might think it strange that any person could be found in the universe, who

would persevere in doubtful practices when very simple experiments would often set disputation on subjects forever at rest. But, as Marryat's Stapleton says, "it is all human nature;" and so it must be endured, and the best made of it. Such may be said on the present subject. Let two hardy fibrous-rooted shrubs be planted side by side, the only difference being, that one be planted twelve inches beneath the surface and the other only six, and twelve months will show that the shallow planted shrub has much the advantage. If the soil be any way rich, the difference between them will be more marked. I once had to plant a very wet piece of ground with hardy evergreen shrubs. I had not sufficient influence to get it drained. I had only to plant. Knowing well these trees would do me no credit if planted in such soil and in the ordinary way, I planted them on the ground. I had the ground dug up, as if for ordinary planting, laid the roots flat on the surface, threw on them broken sods, and covered the whole with fine soil. These trees afterwards afforded me as much satisfaction as any I ever planted. They contrasted strongly with the yellow appearance of others which had been planted in the soil before.

It is the bane of gardening, that it is afflicted with a host of mere theorists. Men of no experience whatever—wanting even an observing turn of mind—will often pass themselves off on the public as first rate gardeners. This acts injuriously on the prosperity of gardening in many ways. One is, that with inconsiderate people, theory is often underrated in its importance. This should not be. It ought to be an established rule, that no person should be deemed a first rate member of any profession, who is not able to tell *why* a thing is to be done as well as *how*. He should, in other words, be master of the theory of his profession as well as the practice. This holds good in the simplest operation. A scientific workman is worth two mere laborers: every one knows that. With these views, it is necessary to consider why trees should be shallow planted.

It has not yet been placed beyond dispute, that vital action, or life in vegetable organisms, is caused by electric agency. Many modern physiologists incline to that opinion. But so far as the principle has been tested by mechanical contrivances, it seems to be a failure. It is, however, certain that vegetable life derives an essential stimulus from heat. A great, probably the greatest, part of the heat necessary to the existence of vegetable life, is derived through the medium of the roots. Hence arises the necessity, that no impediment intervene to interrupt the relations naturally existing between heat and the roots. It is essential that the temperature of the atmosphere should generally approximate to the soil around the roots; because the evaporation of the juices of a plant through the leaves, by a given degree of heat, the same or nearly the same degree of heat can only supply, through the roots. And if the roots of plants, therefore, be in a colder medium than the leaves, more matter will be evaporated than the roots can supply; and if the roots are in the warmer medium, more matter is received into the system than the leaves can digest. In either case, death is the consequence. It is probable the temperature of the earth and air never coincide altogether; one being sometimes much warmer than the other, and sometimes the contrary. It seems to be an established principle, that vegetation is healthier the nearer these approximate. There is a great difference in the temperature of the soil at different depths, near the surface of the earth. Lindley has somewhere published a case, where a trial in summer gave 61° Fahrenheit, at 6 inches below the surface; and at 3 feet, 44°. The nearer then the roots are to the surface, the more equal will be the heat to the roots and to the leaves.

Even could these principles be inviolate, when deep planting is resorted to, it is doubtful whether plants

could long remain healthy so. It is an error to suppose, as many do, that the roots of plants feed only on the soil. They feed also on the gases floating in the atmosphere, through the decomposition of organic beings. More especially do they feed on ammonia, from which they probably derive the major part of their nitrogen. The mechanical force of the descending rain brings these substances to the surface, where they are left to be absorbed by the roots in the immediate vicinity. Roots which are far beneath the surface can so receive no benefit from these revivifying circumstances.

It follows, from these principles, that the nearer the roots of plants are to the surface of the earth, consistently with their real known *aversion to light*, the nearer will they be to those conditions which nature's immutable laws declare to be most conducive to a perfect state of health. Should the transplanted tree be likely to suffer from drouth, a good mulching will effectually prevent that, besides be of good service in affording nutriment.

[We can bear our testimony to the accuracy of Mr. Meehan's statements, as to the disadvantages of deep planting. We have seen hundreds of acres of ash plantations in England, resting on a wet clay subsoil, yielding no produce after a lapse of sixteen or twenty years. It is the same with fruit trees, under similar circumstances. Deep planting may succeed in rich and dry soils, but on such as are cold and wet success is physically impossible. Indeed, we very much question the propriety of planting in the latter at all, without first effecting a thorough artificial drainage, and this should be done deep, or the roots will speedily obstruct the drains.—ED. AGRICULTURIST.]

FRUIT TREES BY THE ROAD SIDE.—The practice of setting out fruit trees by the road-side cannot be too highly recommended. In many parts of Europe this practice is general, and the fatigued traveller acknowledges the well-timed hospitality thus afforded him. The excuse is often made, that the fruit will be stolen, but if the practice were general, the amount of fruit taken by wayfarers would only be what common hospitality would freely grant; and in Germany every third tree, by custom, may be *tabooed*, (the owner of the adjoining farm ties a piece of rag to one of the lower limbs of the tree,) and no traveller will touch it. Travellers inform us that no reward will tempt a German stage-driver to regale his passengers with fruit from a marked tree—two out of three thus being left for their use, if desired, renders the selected tree free from the chance of being used. The amount of fertilizing materials continually wasted upon roads would be rendered available by such a practice, and nothing but extreme selfishness will prevent the use of these materials for public benefit. Many of the larger sorts of fruit trees are highly ornamental and afford fine shade, while the use of fruit trees for shade, like the display of costly mansions, only excite the poor to envy, without adding materially to their comfort or health.—*Working Farmer*.

IMPROVEMENT OF APPLES FROM THE CRAB APPLE.—It has been stated by some writers, and generally believed, that our immense variety of apples all originated from the crab apple. A paragraph in the last American Farmer, quoted from the Alabama Planter, corroborates this statement as follows:—"Our friend, James Magoffin, Esq., of St. Stephens, has for a series of years bestowed considerable attention upon the apple,

and among the many fine sorts he now cultivates, has obtained, by successive plantings of the seed of the native crab apple, one of the best fall and winter apples in the Union."

From this fact we may learn the good results of experimenting with fruits in order to improve their qualities. If a man could live long enough to pursue these researches, he would find astonishing results from his experiments. Van Meres, Knight, and some others, were successful during their day, in improving and procuring new fruits from poor and apparently worthless parents.—*Maine Farmer*.

INSTINCT OF THE ANT-LION.—Among the instincts which direct animals in the acquirement of their food, few are more remarkable than those possessed by the larva of the ant-lion, a small insect allied to the dragonfly. This animal is destined to feed upon ants and other small insects, whose juices it sucks; but it moves slowly, and with difficulty, so that it could scarcely have obtained the requisite supply of food, if nature had not guided it in the construction of a remarkable snare, which entraps the prey it could not require by pursuit. It digs in fine sand a little funeral-shaped pit, and conceals itself at the bottom of this until an insect falls over its edge; and if its victim seeks to escape, or stops in its fall to the bottom, it throws over it, by means of its head and mandibles, a quantity of sand, by which the insect is caused to roll down the steep, within reach of its captor. The way in which the ant-lion digs this pit is extremely curious. After having examined the spot which he purposes to establish itself, it traces a circle of the dimensions of the mouth of its pit, then placing itself within its line, and making use of one of its legs as a spade, digs out a quantity of sand, which it heaps upon its head, and then, by a sudden jerk, throws this some inches beyond its circle. In this manner it digs a trench, which serves as a border of its excavation, moving backwards along the circle until it comes to the same point again; it then changes sides, and moves in the contrary direction, and so continues until its work is completed. If, in the course of its labors, it meets with a little stone, the presence of which would injure the perfection of its snare, it neglects it at first, but returns to it after finishing the rest of its work, and uses all its efforts to get it upon its back, and carry it out of its excavation; but if it cannot succeed in this, it abandons the work, and commences anew elsewhere. When the pit is completed, it is usually about thirty inches in diameter by twenty in depth; and when the inclination of its walls has been altered by any slip, as almost always happens when any insect has fallen in, the ant-lion hastens to repair the damage.—*Carpenter's Animal Physiology*.

MOWING PASTURES.—We have before spoken of the necessity of keeping the grass of pastures from running up to seed and dying on the ground. As grass grows with more rapidity in the earlier part of the season than at a later period, it is difficult to keep properly fed down, without putting on more stock than can be kept on the land after the *flush* of feed is over; and yet, if the grass goes to seed and lies on the ground, the after feed will be less in quantity and of a poorer quality. The difficulty may be overcome by mowing the grass at the right time—before it has run to seed, at all events. This may be done on many pastures to good advantage, the hay obtained being of good quality for any kind of stock; and the pastures are left clean, start equally, and afford a good growth of fresh afterfeed. We have lately met with several farmers who have followed this practice for many years, and they agree with us in regard to its utility.

Education.

KING'S COLLEGE COMMENCEMENT — ADDRESS OF HIS EXCELLENCY THE CHANCELLOR.

(Reported for the *Globe*.)

Thursday was the day appointed for the annual convocation of King's College, Toronto, for the purpose of conferring degrees, &c.; and the occasion was looked forward to with peculiar interest, from the fact that his Excellency the Governor-General was to be present in his capacity of Chancellor of the University, to take part in the ceremonies of the day.

About noon, his Excellency, accompanied by the Hon. Colonel Bruce, arrived at the Yonge-street wharf, from Drummondville, on board H. M. steamship *Cherokee*, and was received by the Rev. Dr. McCaul, Vice-Chancellor of the University. A guard of honour of the Rifle Brigade was in attendance, and the band struck up "God save the Queen" as his Excellency landed. His Excellency immediately entered an open carriage that was in waiting, with the Rev. Dr. McCaul, and drove rapidly off along Front-street, towards Ellah's Hotel, amidst the respectful salutations of the spectators.

The convocation was held, as usual, in the chamber of the Legislative Assembly in Parliament Buildings, and shortly after the doors were thrown open—at half-past one o'clock—every inch of the space allotted to visitors was densely crowded. We observed a very large number of ladies present, who appeared to watch the proceedings with lively interest.

Shortly before three o'clock, his Excellency the Chancellor, accompanied by the officers and professors of the University, and the graduates and under-graduates, together with the masters of Upper Canada College, entered the hall and took their respective stations.

His Excellency, who looked remarkably well, wore the handsome costume of Chancellor of the University, viz., robes of purple velvet with gold border, and cap with gold tassel; his Lordship also wore the star and ribbon of the Order of the Thistle.

After the presentation of a Latin address to the Chancellor, to which his Excellency replied in Latin, the business of the day commenced.

The recitations were highly creditable to all concerned in them, especially an original English poem on Sir Robt. Sale, by T. A. Hudspeth, B.A., which elicited very great applause. The certificates of honour and medals were presented to the successful competitors by his Excellency the Chancellor, who accompanied them with an appropriate address. The prizes were presented in like manner by the respective professors, who complimented the students very highly on their proficiency and application.

At the close of the proceedings, which were throughout of a very interesting and imposing character, his Excellency the Chancellor rose and addressed the audience in a clear and distinct voice. He said:—

Ladies and Gentlemen,—I am informed by the Rev. Vice-Chancellor, that it is customary on these occasions for the person who has discharged the functions of Chancellor, to address a few observations to the audience, with a view of communicating such information as he may be able to furnish, with respect to the state and condition of the University. I feel, ladies and gentlemen, that I shall discharge this office very imperfectly; for, although on the occasions of my brief visits to Toronto, I have devoted as much time as I could spare to the University, to which institution I have always been drawn by a very strong attraction; and although while at a distance from Toronto, I have endeavoured by all the means in my power to keep myself acquainted with its current affairs, I must still confess that I feel that I have accomplished this object less fully than I should have desired; and I

cannot conceal from you my opinion, that so long as the seat of government was at a distance from Toronto, it was not in the power of the Governor-General to discharge the duties of Chancellor of the University in a manner altogether satisfactory to himself or beneficial to the institution. (Loud cheers.) I am very glad, ladies and gentlemen, that it is in my power to make this avowal on the present occasion, in the presence of the learned professors, and of other gentlemen who are interested in the welfare of the institution; because I can most conscientiously affirm, that no one of them either feels more acutely, or more unfeignedly regrets the deficiency with which I may be chargeable in this respect, than I do myself. I am indebted to the Vice-Chancellor for some information which I shall be happy to give you.

It appears that since the year 1843, when this institution was opened, two hundred and fifty students have been entered upon the books, that seventy degrees have been conferred, that there have been fifteen medalists and four Wellington scholars; and no one that has had the opportunity that I have had, of forming an opinion with respect to the quality of the education which is given here, can doubt that this institution has already conferred vast benefits upon Canada. (Great cheering.) And let me observe, ladies and gentlemen, that very peculiar importance attaches to the cause of education here among us at present. I speak now not principally of the general or common school education in which the masses of the community may participate, but of education in its highest branches—of education of that quality which requires such a sacrifice of time and of labour, as few only of the members of the community can afford to give. It appears from statistics which may be depended upon, that the population of Western Canada has during the last thirty or forty years doubled itself in each decennial period; and other statistics, no less reliable, and indeed the observation of any person who has travelled through the country and seen the excellent houses, the well-cultivated farms, and other indications of comfort and prosperity to be met with on every side, show that individual comfort and well-being has been advancing amongst us with equal strides. (Cheers.) Now, surely under these circumstances, it is incumbent upon us to use every exertion, lest the material progress of the country should outstrip its intellectual progress—lest wealth and luxury, increasing without a corresponding increase in those tastes and habits which accompany a high state of civilization, should, like rank and noisome weeds, spread over the surface of our society. (Loud cheering.) Let me assure you that the apprehension which I have now expressed, is by no means chimerical; for we live in an age and in a condition of society, more favourable to the growth of what may be called the acquisitive propensities—to the exclusive growth of the commercial spirit, than any which has existed before in the history of the world. And what, ladies and gentlemen, does that history tell us, with respect to the fate of those communities in which that spirit has inordinately and disproportionately grown and developed itself? Even now, we linger with fond affection among the ruins which were adorned by the generous art of Phidias, among groves and temples which have echoed the profound teachings of Aristotle, the transcendent philosophy of Plato, the brilliant and persuasive eloquence of Demosthenes, the fervid lays of Æschylus and Pindar, and the chaste measures of Sophocles and Euripides. Nay, more than this—a lurid grandeur hangs like a halo over the memory of those rude and gallant people, whose deeds of war and chivalry were tempered by a reverence for the beautiful and good, and by a generous spirit of self-sacrifice. But we pass by the monuments of such cities as Carthage and Tyre, and what do we find written upon them, except the solemn warning, "Vanity, vanity, all is vanity"? (Loud cheering.) There are

upon this continent, cities which in an infinitely shorter space of time, have engrossed commerce and accumulated wealth far exceeding that of Carthage or of Tyre; and, although it be true that our progress in Canada has been more equable, that it has been more generally diffused over the country as well as in the towns, and that therefore we have no reason for the same degree of apprehension here; yet, can we say that the caution which I am now giving you is altogether uncalled for, when we find that questions most deeply affecting the well-being of ourselves and of our children—questions involving the highest considerations of public duty and of public morals, are discussed and determined on with an exclusive reference to commercial considerations? (Cheers.) Now, gentlemen, among the agencies which I believe to be most potent in keeping this spirit in check—a spirit, allow me to say, which is most valuable and useful within its proper sphere, but most dangerous when allowed to transgress beyond it—is education; an education such as a university can give—an education which proceeds upon the assumption, that it is well for man that his highest faculties should be cultivated—an education which proceeds on the assumption, that knowledge is desirable for its own sake alone, independently of the adventitious advantages which it affords to its possessors. (Cheers.) Ladies and gentlemen, we all know how frankly and unreservedly the philosophers of the olden time admitted this great truth; we know that the best and purest among them based their conception of human felicity upon earth, not on the acquisition of wealth or honour, or in the hot chase after such transitory good, but in a condition which was designated by them by the term *σχολη*—a condition of beatific repose, in which the highest faculties of the human soul, secure from perturbations from without, and from the cravings of appetite within, might be enabled peaceably to energe. It may be true that we cannot, as practical men, or as Christians, accept without qualification this ideal of the heathen philosophy; it may be true—as it undoubtedly is true—that few among us can expect, while we are in this militant condition, to be able to give to those who would counsel us to take repose, any other reply than that which was given by a lion-hearted hero of the Church at the time of the Reformation, to the friends who tendered to him similar advice, in these memorable words, “Rest, rest, have we not eternity to rest in?” (cheers); it may be true—as it undoubtedly is true—that we have a better and surer definition of *σχολη* than any which the schools can furnish in the sublime but simple sentence, “*ἡρα ἀπολείπεται σαββατισμός τῷ λαῷ τοῦ Θεοῦ*.” Nevertheless, I feel that the University of Canada has a high office to perform—to hold aloft the lamp of science above the mists and murky vapours that would obscure its lustre—to inculcate constantly and steadily a love for all that is loveable and of good report, and to point to those sublime heights which can only be scaled by the patient, persevering and single-hearted. God, in his mercy, grant, that under all vicissitudes and changes, under all circumstances of season and of time, the University of Canada may ever remember how holy and how important are its functions.

His Excellency here resumed his seat, amidst enthusiastic and prolonged cheering from the crowded audience.

At the conclusion of his Excellency's speech, the meeting was closed with the customary formalities.

[We are compelled to omit the list of graduates, &c., for want of room.—*Ed. Agr.*]

The earth is the great nursing mother of all plants; they in their turn minister, directly or indirectly, to the nutrition and sustenance of animal life; the lamb and the kid feed upon herbage, the direct growth of the soil; the wolf and other of the carnivora feed upon the lamb and the kid—thus they derive their food indirectly from the soil.

NORMAL SCHOOL, TORONTO.

The semi-annual examination of this valuable institution was held on the 10th, 11th and 12th of October, and it was throughout of a very satisfactory character. We regret that our space will admit only of a brief, general notice. His Excellency the Governor-General attended some parts of the examination, and evinced great interest in the proceedings. His Lordship then rose and addressed the auditory with that fluency of speech for which he is celebrated. He expressed his gratification at the information he had derived from the explanations offered by Dr. Ryerson and Mr. Hind, and satisfaction at the creditable examinations through which the students had passed, complimenting Messrs. Robertson and Hind on their efficiency as teachers. There was scarcely any of the duties which devolved upon him, in which he felt greater interest than in promoting education; and if there was any part of the observations which fell from Mr. Hind, which he would feel disposed to criticise, it was that which related to Agricultural Chemistry—a study which his Excellency would wish to see pursued in all the public schools of the province. It seems that in all new countries, Canada included, there was too little attention paid to agriculture. The learned professions, as they are generally called (and he did not wish by any means to depreciate them), appeared to be elevated at the expense of agriculture. He could not see why this should be so—for there was no more honourable pursuit than the cultivation of the soil, and there certainly should be none more so in an agricultural country like Canada. His Excellency related an anecdote which he overheard in the course of his tour. A farmer with a large family of sons, in conversation with a friend said, that he was determined to make a man of one of them at least. And how do you suppose he was to make a man of him? By making him a lawyer, a doctor, or a clergyman. (Laughter.) The clergyman had to study those subjects which connect man with his God—which connect eternity with time; the lawyer had to study those matters which relate to the social condition of those amongst whom he lives; and the doctor had to study subjects relating to human physiology; while the farmer, by making his business a profession, and paying due attention to the study of vegetable physiology and agricultural chemistry, would find an ample field for the exercise of his mental faculties, of more than ordinary interest, sufficient to elevate him in the scale of human beings, to an equality at least with those who prosecute either of the learned professions. He regarded the pursuit of agriculture as the most honourable of all, and he felt greatly interested in elevating it to its proper sphere in this country—which is peculiarly an agricultural one—by the introduction into the common schools of the study of agricultural chemistry. A man may be a good farmer, under present circumstances, without a knowledge of this important branch of study, but surely a knowledge of it would not make him the less so. His Excellency expressed his regret that his intentions respecting the prizes had been misinterpreted—he certainly intended that they should have been competed for and awarded at each semi-annual session of the Normal School. His Excellency again expressed his gratification at what he had witnessed, and resumed his seat amidst great applause.

Editors' Notices, &c.

STORING FRUIT—H. M.—Your inquires did not reach us in time to be answered in our last number. First, let the fruit be sufficiently ripe before it is gathered, an operation that should be performed with all choice varieties with the greatest care, so as neither to break the branches of the trees, nor bruise the fruit. We cannot at present describe the various expedients used for this purpose; such as ladders, baskets, &c. A very ingenious contrivance was exhibited at the late Agricultural Show at Richmond Hill, for gathering fruit from high trees, invented by a gentleman in this city, which is particularly worthy of notice. All fruit, such as apples and pears, in which the ripening process is not quite complete, undergoes considerable fermentation, after being gathered and put into heaps. When gathered, it should be spread on boards in a dry situation of moderate temperature for several days. Dessert apples should remain on the tree till their characteristic flavour is fully developed. Ordinary sorts, for kitchen purposes, may be gathered at an earlier stage of ripeness. As to the mode of storing, something must depend on convenience, climate, &c. In this country a good, dry, airy cellar is indispensable, as the effects of frost cannot be safely guarded against in any other available situation. The temperature must not be high; from 40 to 50 degrees, it is thought by the best judges quite sufficient. Light should in a great measure be excluded, as that element is found, particularly under a high temperature, to hasten the decay of fruit. In such a situation most kinds of apples may be kept in old flour barrels, with a little clean straw at the top and bottom, and the head of the barrel taken off. Choice fruit may require more care. It is a good practice to look over it once or twice during the winter, separating all the unsound, &c. *Winter Pears* should be carefully stored away in a cool situation; and it is a good practice to separate them by pieces of paper, or other dry substances. The ripening process may afterwards be completed by bringing them into a warm room.

GOVERNMENT AGRICULTURAL GRANTS.—Several complaints have reached us on account of these grants not having as yet been paid, thereby occasioning much inconvenience and dissatisfaction. We regret this circumstance equally with our correspondents, some of whom, however, we think are a little unreasonable, and look at the matter too much in a party light. Government, we presume, have to meet their demands according to some order of precedence, and financial difficulties alone are, no doubt, the occasion of the delay. We would inform such as have outstanding claims against the Provincial Association, that their demands will now be soon met, and due notice will be given. As the conductors of this journal, we are neither the apologists nor assailants of any political party; but we may be permitted to say, that the liberal parliamentary grant of last session to the Provincial Association will be among the chief means of placing that valuable institution in an unfettered and healthy position. In order to replenish our empty exchequer, little more appears to us to be necessary than to foster a united and liberal feeling of nationality, and to combine all our means in developing the natural resources, agricultural, manufacturing and commercial, with which a bountiful Providence has so largely blessed us.

T. H. S. is informed that the publication of reports of the exhibitions of the various agricultural societies in the province, carefully prepared and condensed, is a matter which has engaged much of our attention.

We should be happy to make our journal the medium of permanently recording the state and progress of our industrial arts in every district. But in order to do this, we should need the co-operation of the secretaries of the different societies, and the support of all the friends to improvement. We shall be glad to receive suggestions on this subject.

W.—Your communication and proposal are under consideration.

THE MARKETS.

The latest accounts from England (October 13) confirm the previous expectations of an abundant harvest. There was, however, a little more animation in wheat, in consequence of partial rumours that were daily gaining ground of the potato rot, particularly in Ireland. Potatoes were abundant in quantity; and from the accounts which have reached us from various parts of the British Isles, there is good reason to hope that a large proportion will be secured in a sound condition. The importations of wheat and other grain continued pretty large, and although prices may improve a little for a short time, especially if the expressed apprehensions of the potato disease be confirmed, yet we are inclined to believe that prices must necessarily continue depressed in the British market. The hop-picking had finished, and the crop was a very short one. Duty estimated about £80,000, and prices ranging between £6 to £9 per cwt. We learn that the Chancellor of the Exchequer has declined to remit any portion of the hop duty for 1848, and that much distress prevails in all the hop-growing districts. A quantity of hops had been imported from Belgium and the United States, paying an import duty, if sold for consumption in the United Kingdom, of £2 5s. per cwt.

In the *Toronto* market considerable business is doing in wheat, at from 3s. 9d. to 4s. per bushel, chiefly for exportation to the States. In flour little doing. Navigation will shortly close, when prices may be expected to recede.

TORONTO MARKET.

Nov. 10, 1849.

	s.	d.	s.	d.
Flour, per bbl. 196lbs. - - - -	17	6	to	20 0
Wheat, per bushel, 60lbs. - - - -	3	9	to	4 0
Barley, per bushel, 48lbs. - - - -	1	6	to	2 0
Rye, per bushel, 56lbs. - - - -	2	0	to	2 6
Oats, per bushel, 34lbs. - - - -	1	0	to	1 3
Oatmeal, per bbl. 196lbs. - - - -	15	0	to	18 0
Pease, per bushel, 60lbs. - - - -	1	6	to	1 9
Potatoes, per bushel - - - -	1	0	to	1 3
Onions - - - -	3	6	to	5 0
Beef, per 100lbs. - - - -	17	6	to	20 0
Timothy, per bushel, 60 lbs. - - - -	6	0	to	8 0
Turkeys, each - - - -	1	3	to	2 6
Geese, each - - - -	1	3	to	2 6
Ducks, per couple - - - -	1	0	to	1 6
Chickens, per couple - - - -	1	6	to	1 9
Pork, per lb. - - - -	0	2½	to	0 3½
Ham, per 100 lb. - - - -	35	0	to	45 0
Bacon per 100 lbs. - - - -	36	0	to	40 0
Mutton, per lb., by the quarter - - - -	0	2½	to	0 4
Lamb per quarter - - - -	2	0	to	3 0
Fresh Butter, per lb. - - - -	0	7½	to	0 9
Firkin Butter, per lb. - - - -	0	5	to	0 6
Cheese, per lb. - - - -	0	3	to	0 5½
Lard, per lb. - - - -	0	4	to	0 4
Apples, per barrel, - - - -	10	6	to	15 6
Eggs, per dozen, - - - -	0	6	to	0 7
Fowls, per pair - - - -	1	3	to	1 1
Straw, per ton, - - - -	25	0	to	30 0
Hay, per ton, - - - -	30	0	to	40 0
Fire Wood - - - -	12	6	to	15 0

FOR SALE.

FIFE'S SPRING WHEAT.

A QUANTITY of Fife's Spring Wheat can be delivered in barrels, at Cobourg, during sleighing, to ship to any part of the Province. Personal applications may be made to the nearest Member of the Society, or the Treasurer, THOMAS SHORT, Esq., Merchant, Otonabee, or by letter, post paid, to the Secretary of the *Otonabee and Asphodel Agricultural Society*.
Colborne District, C. W.

Nov. 1, 1849.

11

SHOE AND LEATHER STORE.

DANIEL FARAGHER begs to inform his friends and customers that he has opened a *Shoe and Leather Store*, at No. 22½ Yonge Street, Toronto, where he will be prepared to furnish all kinds of work in his line at the most reasonable prices. Having a Tannery of his own in active operation, he can supply the trade and others with as good an article of Leather, and at rates as low, as can be obtained elsewhere.

DANIEL FARAGHER.

January, 1849.

1-tf.

TORONTO NURSERY.

FOR SALE, an extensive collection of FRUIT TREES, consisting of all the choicest sorts of Apples, Pears, Plums, Cherries, Peaches, Grape Vines, Raspberries, Gooseberries, Strawberries, Currants, Asparagus, and Rhubarb Root, &c.

Also, Ornamental Trees, Flowering Shrubs, Hardy Roses, Herbaceous Flowering Plants, &c., in great variety.

Descriptive Catalogues, containing directions for transplanting, furnished gratis to post-paid applicants.

GEORGE LESLIE.

March, 1849.

4

PAPER HANGINGS!

A LARGE and CHOICE assortment of PAPER HANGINGS, of the newest styles of patterns, for Sale, wholesale and retail, by

BREWER, MCPHAIL, & CO.,

46, King Street East.

Toronto, April, 1849.

5-lin.

**WM. M'DOUGALL,
ATTORNEY, SOLICITOR, &c.,**

South West Corner of
KING AND YONGE STREETS,
TORONTO.

Deeds, Mortgages, and other Legal Instruments.
promptly prepared.

WANTED TO RENT.

A FARM of about 100 Acres, well cleared, the soil to be of excellent quality, well fenced and in good cultivation. The house, barns, and other necessary out-buildings, to be in a good state of repair. The farm not to exceed 4 or 5 miles from a town. The preference will be given to one with a good running stream through it.

All communications, stating fullest particulars, rent, &c., to be addressed (post paid) to D. J., Post Office Box 212, Hamilton.

Toronto, June 30, 1849.

7

ANNEXATION!

ANNEXATION!! ANNEXATION!!!

LEATHER! LEATHER!!

N. YORK, PHILADELPHIA & FRENCH.

LEATHER of all kinds suitable for the Trade.
L HOG SKINS—SKIRTING—FAIR BRIDLE—
TOP—BAND—HOSE, &c. &c.

HIDES—10,000: KIPS, &c. &c.

For Sale by

JAMES BEATY.

No. 120, King Street East.

Toronto, 1st Nov., 1849.

11-3

The Canadian Agriculturist,

A MONTHLY JOURNAL OF AGRICULTURE, HORTICULTURE, MECHANICAL AND GENERAL SCIENCE, DOMESTIC ECONOMY & MISCELLANEOUS INTELLIGENCE: Published by the Proprietors, W. McDougall and Geo. BUCKLAND, on the first of each month, at their Office, near the South-west corner of King and Yonge Streets, Toronto.

Subscription ONE DOLLAR, in advance. Advertisements 4d. per line each insertion.

Societies, Clubs, or local Agents ordering twelve copies and upwards, will be supplied at 3s. 9d. per copy.

Money, enclosed in a letter, and addressed to the "Editors of the Agriculturist, Toronto," will come perfectly safe. As we shall employ but few agents this year, those who wish to pay for the last, or subscribe for the present volume, need not wait to be called upon.

Payment in advance being the only system that will answer for a publication so cheap as ours, we shall send the remainder of the volume to none but those who order and pay for it.

LOCAL AGENTS.—Any person may act as local agent. We hope that all those who have heretofore acted as such will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending four subscriptions. Those sending twelve and upwards will be supplied at 3s. 9d. per copy.

CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash Prices for 1000 bushels clean Timothy Seed; 100 bushels clean Spring Tares; 100 bushels White Marrowfat Pea and 25 bushels Flax Seed.

JAMES FLEMING,

Yonge Street,

Seedsman and Florist.

Toronto, Jan. 1, 1849.

1

MESSRS. DENISON & DEWSON, Attorneys,
&c., New Market Buildings, Toronto.

January 26, 1849.

2

Clothes lines are made of gutta percha, which have been exposed constantly to sun and rain, heat and cold, for two years, without any perceptible deterioration.

Pekin at one time was the largest city in the world. London is now the largest; and New York is the largest city in the United States.

BRONTE MILLS FOR SALE.

THE Property consists of sixteen feet privilege on the Twelve-Mile-Creek on the Lake Shore, in the Township of Trafalgar, and about seventy-five acres of good cleared farm Land; a large stone and frame Woolen Factory, 82 feet by 32 feet, and three stories high, capable of being easily converted into a Flouring Mill; a Grist Mill, with one run of Stones, Smut Machine and all requisites; Two Saw Mills, with Circular Saw; Lumber Yard Railway; a Blacksmith's Shop and several Dwelling Houses. This property is now let to a yearly tenant for £200 per year, and would bring on a lease £250. Price £2,500, of which only £100 would be required down; the residue might be paid by instalments as agreed upon.

ALSO,

A Privilege on the same Creek of 12 feet, next above the Mills, with about 75 or 80 acres of land, mostly cleared and in cultivation, and an excellent Mill Site, with good Roads. Price £1000, of which £300 would be required in Cash; the remainder by instalments. The option of this part of the property is offered to the purchaser of the first, and, if not taken, it will be sold separately.

ALSO,

Adjoining the above, a Farm of about 70 acres, in full cultivation, with a large unfinished Dwelling-House thereon, and an Orchard of four acres of grafted Fruit Trees. Price £700, of which only £200 would be required immediately; the rest in ten years. The whole of the above property will be sold together, if desired. For particulars apply (post paid) to S. B. Harrison, Judge H. D. C. Toronto.

Toronto, March 1, 1849.

THOROUGH-BRED STALLIONS FOR SALE.

THE Imported Horse PANMURE, got by Gen. Grosvenor's celebrated horse *Glaucus*, and out of Lord Chesterfield's celebrated mare *La Bayader*.

Also, the three year old Horse KINGSTON, got by imported *Pannure*, dam *Miss Barrie*, by Sir R. Barrie's imported *Daghee*, granddam *Sally Walker* by imported *Roman*, great-granddam by *American Eclipse*, g.g.g.-dam by imported *Messenger*. *Miss Barrie* took the first premium for thorough-bred Mare at the Provincial Show for 1849.

PANMURE has proved himself an excellent Stock-getter in the Midland District.

The young Horse KINGSTON took the first premium for three year old thorough-bred Stallion at the Provincial Show of this year. Another colt by the same horse and dam, took the first premium for two year old thorough-bred Stallion; and some of *Pannure*'s colts by common mares also took premiums at the same Exhibition.

For further particulars apply to the Editors of the *Agriculturist*, or to G. A. CUMMING, Esq., Kingston, G. W.

October 1, 1849

SEVERN'S BOTTLED ALE.

THE Subscriber, having resumed his former Business in a convenient locality, with a large stock on hand, of a superior quality, and in prime condition, would hope to secure a continuance of the patronage and support hitherto conferred upon him.

J. D. BARNES,

6, Wellington Buildings.

Adjoining Mr. Sterling's, King-st

Toronto, Jan., 1849.

NEW CARRIAGE FACTORY.

WILLIAMS & HOLMES;

HAVE REMOVED their *City Carriage Repository* to 142, Yonge Street, where they have commenced a Manufactory in all its branches. Parties wishing to purchase for Private or Public Business, are requested to give them a call before purchasing elsewhere, as their facilities are such as to enable them to manufacture cheaper than any other Establishment in Toronto.

Toronto, January 1, 1849.

1-tf

N.B.—The public are respectfully invited to an inspection of their Lumber and other Building Materials, as none but the very best will be used.

MAMMOTH HOUSE,

Removed to the Store next door South of Mr. Elgie's Tavern, Market Square.

THOMAS THOMP-ON is happy to inform the Public, that, by the praiseworthy exertions of his friends, he has saved from the destructive *Conflagration of 7th April*, staple and fancy DRY GOODS, GENERAL CLOTHING, HATS, CAPS, BOOTS, SHOES, &c. &c., to the amount of upwards of \$15,000! partially damaged, which will be sold at a great sacrifice. The above Stock, with the early *Spring Arrivals* now opening out, will comprise a splendid assortment of *cheap and fashionable Goods*, the whole of which he is determined to have cleared out previous to his re-opening the new Mammoth House.

Toronto, 17th April, 1849.

PHENIX FOUNDRY,

No. 58, YONGE STREET, TORONTO

GEORGE B. SPENCER,

(LATE C. ELLIOT.)

CONTINUES every Branch in the above Establishment, as heretofore; and, in addition, keeps constantly on hand a good assortment of Cooking, Parlor, Box, and Air-Tight Stoves, of the most approved patterns.

Also, a Second-hand Engine, with or without the Boiler, Twelve-horse Power, will be sold very cheap for Cash or short payment.

Toronto, Jan. 26, 1849.

1-tf

STOVES! STOVES!! STOVES!!!

J. R. ARMSTRONG,

CITY FOUNDRY,

No. 116, Yonge Street, Toronto,

HAS constantly on hand Cooking, Box, Parlour and Coal Stoves, of various patterns and sizes, *very cheap for cash*.

Also, a New Pattern Hot-air Cooking Stove, just received, taking three-feet wood, better adapted for the country than the Burr, or any other Stove now in use. It has taken the First Premium at every Fair in the United States, where it has been exhibited.

Ploughs, Sugar Kettles, Grist & Saw-Mill Castings, Steam Engines, Sleigh Shoes, Dog Irons, and a general assortment of Castings.

ROWELL AND THOMPSON, PRINTERS, TORONTO.

THE CANADIAN AGRICULTURIST.

VOL. I.

TORONTO, DECEMBER 1, 1849.

No. 12.

NOTICE TO SUBSCRIBERS.

THE first volume of the *Agriculturist* being completed, the Proprietors desire to address a few words to their Subscribers and the Public. For the support and literary assistance with which they have been favoured, they avail themselves of the present opportunity to render their grateful acknowledgments, and to express a hope that the same may be continued through another year. As the utility and profit of a paper of this character must mainly depend upon the extent of its circulation, and it being the wish of the proprietors to make this journal an efficient medium of communication between the districts of Upper Canada, on all subjects relative to agriculture, gardening, and the useful and domestic arts, they have determined on reducing the price, to Clubs and Agricultural Societies ordering 25 Copies, directed to one address, to HALF A DOLLAR PER ANNUM. This offer is made distinctly on the condition that a sufficient number of Subscribers shall be obtained, to guarantee the proprietors from a direct pecuniary loss. If the number should fall short of that point, the alternative will be adopted of reducing the size to 24 pages. To this the proprietors would be sorry to resort, since original matter, connected with and illustrative of the agricultural, manufacturing, and other industrial interests of the Province, is likely to increase in their hands, and therefore, instead of diminishing, they would rather increase the size of the publication. It is intended to make a proposal to the Directors of the Provincial Association, at their meeting in February next, to insert their reports and transactions; and it is believed that, if this enterprise is supported by the country, as its importance and utility appear to deserve, the *Agriculturist* may be placed in a position both remunerating and permanent, at the reduced price above proposed. No travelling agents will be employed, as the proprietors have found that such a system, with a paper so cheap as the *Agriculturist*, is certain to entail a pecuniary loss.

TERMS.

Single Subscribers.....	5s. per annum.
12 copies, each	3s. 9d. "
25 and upwards, each	2s. 6d. "

Present subscribers will have to renew their subscriptions, as no numbers of the new volume will be supplied, either without order or pre-payment. Agricul-

tural Societies will be expected to pay on the receipt of their usual funds. It is urgently requested that those who intend patronizing the paper will inform us, by the 1st of January at the latest, what number of copies they will take, that we may be able to determine, before going to press, the edition required.

CLOSE OF THE VOLUME FOR 1849.

The present No. concludes the volume of the *Agriculturist* for 1849. A very full Index has been prepared for the use of those who wish to preserve the work, and we trust all who have taken it for the year, will feel a sufficient interest in the progress of agricultural improvement in their country, to preserve for future consultation and reference, the only paper published in Western Canada, exclusively devoted to the farmers' interests, and which may also be said to be the only record of the facts connected with, and illustrative of such improvement, that has been published for the present year.—We shall be happy to supply any subscriber who has not received the whole 12 Nos., with the No. or Nos. that may not have come to hand, upon being requested so to do, *post paid*, if by mail. We have plenty of back numbers on hand, and are very anxious that every subscriber should get all he bargained for. Mistakes and neglects will occur now and then in the "best regulated families;" and until our Post Office in Canada is placed on a better footing, mistakes and miscarriages will be frequent, let publishers be ever so careful.

The *Agriculturist* will again, we regret to say, prove a considerable loss to the proprietors, over and above the time and labour that have been expended on it during the year. Finding that the plan of employing travelling agents only added to our expenses and losses, it being utterly impracticable to enforce the *cash in advance* system, even for so small a sum as one dollar, we called in our agents at the commencement of the present year. We were consequently left to the support of Agricultural Societies and spontaneous subscribers. We had about 6000 names on our books for 1848. To each of these persons we sent three numbers of the present volume, to supply a deficiency in the volume of 1848, which occurred through the misfortunes of a former proprietor, and to remove all cause of complaint against the work on the ground that a former contract was not

completed. At the same time we informed those subscribers that the remaining *nine* numbers of the *Agriculturist* would be sent for 3s. 9d., in the hope that the great majority of them, seeing the improved and more costly character of the publication, would at once order the remainder of the volume. We confess that we felt a good deal discouraged, and lost much of our confidence in the progress of intelligence and desire for improvement among the farmers of Canada, when we saw that fully 3000 of those who received our first 3 numbers neglected to send their paltry 3s. 9d. to secure nearly 350 pages of practical and scientific information on agriculture, and to sustain the only publication in Western Canada entirely devoted to, and identified with their class and interests! Of the remaining 3000, a large majority are members of Agricultural Societies, and obtained the paper through their Society. The reduced rates at which we supplied Societies, and the loss of three numbers of the volume to the extent of 6000 copies, have left us something less than half a dollar for each subscriber this year. When we assert that less than 6000 subscribers (allowing for the usual losses and delinquencies) at half-a-dollar, will not pay for the paper and printing of a work so large as the *Agriculturist*, our readers may easily ascertain how much we have made by our enterprise this year! We have not yet obtained half the amount subscribed by Societies, owing probably to the delay in the payment of the usual government grant. Our paper makers and printers nevertheless had to be paid. We hope this hint will be sufficient to induce those who are in arrear to forward us our due.

We have made up our minds to discard the advertising sheet and reduce the number of pages to 24. Advertisements in a monthly paper do not pay for setting the type. Our paper will then be as large as the *Genesee Farmer*, and we shall be able to furnish it to Societies for half-a-dollar. At the present size it could not possibly be afforded at that price. The price to single subscribers will remain the same as at present, and by excluding long articles, which very few take the trouble to read, and by taking more pains in the selection of matter, obtaining wood-cut illustrations, &c., we believe we can make a more readable paper, and an equally useful one. We have already obtained several interesting cuts for the next volume, for some of which we are indebted to the polite attention of Mr. Moore of the *Genesee Farmer*. In this manner we shall reduce very considerably the expense of getting out the paper, without impairing its efficiency as an agricultural journal.

We have further to say, that if the *Agricultural Association* accept our offer to print their Report, which is in course of preparation, the probability is, that we should be able to give our subscribers, at the above reduced price to Societies, more reading matter than is contained in the present volume. The proposal we intend to make is simply this—to print a portion of the Report along with each number of the *Agriculturist* (but over and above the twenty-four pages), using the same type to

strike off as many copies of the Report as may be required, in a separate form, for the Association. We shall ask merely to be reimbursed the actual cost of the paper and printing, which will be no more, but probably much less, than it will cost the Association to print the Report in any other way; and the country will derive the advantage of a more general circulation of the statistical and other information which will be embodied in it, than could be obtained in any other mode. We presume the chief object of publishing the Report, or "transactions" of the Provincial Society—which may be made to embrace the proceedings of the District Societies also—will be to lay the information therein contained before the farmers of Canada. If so, the publication of these "transactions" along with the *Agriculturist*, will be the best way to attain it. The publication of such reports by the Legislature in the Appendix to their Journals, or even in a separate form, as has been recommended by some persons, would be an utter farce—nay, worse—it would be a useless waste of public money. The farmers of the country would never see them. We happened the other day, while in the office of an Honourable member, to get a hasty glance at the Appendix of the last session; and there we discovered, among a wilderness of public documents, reports of agricultural societies in Upper and Lower Canada, furnished under the acts by authority of which public grants are made to these societies. Some of the reports were quite lengthy, and contained matter of great interest. Judging from the number of pages occupied, and the enormous prices paid for the public printing, we have no doubt it has cost the province two or three hundred pounds to print these reports—which none but members of parliament ever read! The majority of these gentlemen being lawyers, and having an eye to other things than the improvement of agriculture, we strongly suspect even they do not read them! We would willingly have copied some of the facts from the reports in this formidable Appendix, but the honourable gentleman had but the one copy, and not wishing to borrow it for fear of accident, we left them buried in their present obscurity. Now, we ask our readers if such an expenditure of the public money be not a useless—a shameful waste? Three hundred pounds, properly applied, would spread all the information in these Appendices, and a great deal more which could be embodied in the report of the Provincial Society, before eight or ten thousand of the farmers of the country—the very class for whose benefit it is or ought to be collected and disseminated. We shall be prepared to submit a better mode to the Directors of the Association, and if necessary to the Legislature, the result of which we shall explain to our readers.

We shall make every effort to sustain the *Agriculturist* for another year; and if, under the arrangements we have mentioned, it fails to pay expenses, it must be abandoned.

BEAUTY is as summer fruits, which are easy to corrupt, and cannot last.—Lord Bacon.

PROFESSOR JOHNSTON'S EXPERIMENTAL AGRICULTURE.

We take the following review of Professor Johnston's new work from a recent number of the *Scottish Agricultural Journal*, believing that it will be interesting to our readers. We also append a list of the learned Professor's Agricultural works, with their prices and the name of the publishers, any of which may be obtained through the medium of Canadian booksellers that receive orders for English publications. Some of these works have been reprinted in the United States, and have had a very extensive circulation. There are no publications, with which we are acquainted, of equal scientific authority that will bear a comparison with those of Professor Johnston for practical purposes, and adaptation to the wants and comprehension of the thinking and improving portion of our farmers. They indicate deep and patient scientific research, correct and extensive observation of agricultural phenomena, and a cautious spirit of generalization, which cannot fail to lead to improvements based upon sound data. Every young farmer, imbued with the true spirit of his noble profession, ought to make himself acquainted with the facts and reasonings of these truly valuable publications.

This is, or ought to be, the work for the day. It presents a digest of practical agriculture from the most active mind engaged in the cause of improvement upon scientific principles. Opportunely as it appears, it could not nearly have come so much so, were it not the result of years of the most ample and energetic experience and enquiry. Professor Johnston's account of the volume is, that, with a view of gradually collecting a body of such data, he published his several series of "Suggestions for Experiments in Practical Agriculture," and succeeded in inducing such men as Mr. Fleming of Barrochan, to undertake field experiments, whilst the English and Scottish agricultural societies, and several local Scotch societies, of which he makes honourable mention, (viz., the Turiff and Strathmore), as well as the Guildford English Society, called forth other experiments by the offer of premiums. The transactions of the Highland and Agricultural Society have also given the results of numerous experiments with saline and other substances, applied to different crops, in soils of nearly all varieties, and upon many geological formations. Upon the records of all these experiments, Professor Johnston has performed a criticism for which no man could possibly be more competent. Worthless, conflicting and contradictory as they stood, they have resolved themselves into something valuable at his touch; for he has applied to them the philosophical discrimination required, to rectify results often incorrectly or carelessly stated—to separate

the good from the bad, and weigh their worth as experimental data.

We must, however, forewarn the reader, that the Professor does not express any overweening confidence, even in the materials thus sifted and purified. He frankly admits that his examination of what has hitherto been done in the way of field culture, has led him to the conviction, that scarcely any results we have as yet obtained are to be relied upon as sure grounds for scientific opinions. "Yet," he says, "they may be considered to have cleared the path to surer results, by pointing out sources of error previously unknown, and thus indicating the precautions to be adopted in future trials."

Aided by the labours of the present Author, the agricultural student will, therefore, find even bad experiments invested with a moral value; for it is but justice to Professor Johnston to state, that he has made it, before all things, his business to discuss the art of experimenting itself.

He has first unfolded the knowledge necessary for making experiments, and then explained the way in which they ought to be made and estimated. These are the important elements of the first of the two parts into which the work before us is divided; and we regard it as embracing the consummation of the whole—as one of the most remarkable contributions ever made to scientific agriculture.

The second part, it may be as well here to mention, may be considered as of much more immediate value. It is less novel, being chiefly the digest on which the learned Professor has founded all his institutes—considerations on actual experiments with saline and mineral substances, sulphuric acid, the sulphates of potash, soda, lime, magnesia, and iron; gypsum; chlorides of potassium, sodium (common salt), calcium and magnesium; muriatic acid; chloride of calcium; carbonates, phosphates, and silicates of potash and soda; nitrates of potash, soda, lime, and magnesia; salts of ammonia; lime; and the compounds of baryta and alumina; burned clay and shale.

To return, however, to part first,—Professor Johnston shows that the experimenter must know the substances, organic and mineral, of which the plant consists, and forthwith supplies a lucid general analysis of these constituents—the functions performed in plants by their organic and inorganic or mineral constituents, of which functions he furnishes a correct detail:—That he must know the functions of the several parts of the plant, the habits and analogies of the species on which experiments are to be made, and of their several varieties. The illustrations of this last requisite of knowledge in experimenting, are so characteristic of the way in which the Professor has adroitly contrived to supply the information for which he insists, that we cannot help citing it as a specimen of the work:—

"1. THE OAT and the red clover love a firm and stiff soil—a natural habit, which chemistry cannot hope to change. On some soils the Tartary oat yields heavy crops, while, on the same soil, the more valuable potato oat refuses a remunerative return. Where other varieties of oats grow sound, the Hopeton oat is subject to a disease called sedge or tulip root, which is gradually

driving it out of cultivation. I do not know whether these qualities of the potato and Hopeton oats be within the dominion of mechanical or of chemical causes.

"2. WHEAT.—Winter wheat fails in many places where spring wheat is found to do well. Such a result has been observed in the island of Islay, where so many improvements have, in late years, been made by Mr. Campbell of Islay. Is chemistry or climate, or the special constitution of the variety of wheat, or the mechanical condition of the soil?—and which of these causes has most to do with the capability of this or that field to grow white or red wheat, or with the greater productiveness of this than that variety of seed on similar soils?

"3. BARLEY affects a lighter soil, but the quality of the grain varies with the natural dryness, the drainage, or the quality of the land; and the malster, the feeder, or the pot-barley maker, buy it accordingly. Yet, in regard to the physical condition of the soil, different varieties have different tendencies. The chevalier barley grows on clays on which the Annat—one of our best varieties—does not succeed; and this is probably one reason why the chevalier barley has spread so widely, and yields good crops even on the Huntingdon clays. Some varieties show a great indifference as to the physical nature or condition of the soil, while others are most choice in their selection of a suitable soil. Thus the Annat variety, already mentioned, not only dislikes a clay, but a gravelly soil also, and thrives best on a dark coloured loam.

"4. RICE grows usually on low alluvial flooded tracts of land, and abundance of water at the earlier stages of its existence are, in most cases, a necessary of life to this plant. But there are varieties of hill rice which grow healthily, and ripen on dry land. This difference, though a little more striking, is, in reality, not more remarkable or deserving of attention than the constitutional differences above mentioned in regard to barley.

"5. THE TURNIP.—The numerous variety of turnip so generally known in this country, differ little less in habit, and tendency, and choice of soil, and power of resisting climate, than varieties of grain do. It is essentially favoured by a cold and humid climate. Hence it is a less profitable culture in our southern counties, and yields less abundant crops along our eastern borders. The yellow and the white varieties differ greatly in nutritive value and in climate habits. Of white turnips, again, varieties differ. Thus the *white stone* comes quicker to maturity than the *white globe*; so that what is fitted to nourish and bring forward the one will not promote the growth of the other in an equal degree, or cause it in the same month of the year to yield an equal crop. In different districts, also, and under different treatment, the same variety is differently nutritive—a circumstance of much importance in all experiments on feeding.

"The turnip is also liable to special attacks from insects, and special diseases—such as that called *finger-and-toes*—accidents which are more or less completely beyond the calculations of pure or theoretical chemistry.

"6. As the cultivated carrot is the offspring of the wild carrot (*daucus carota*), so the white beet (*beta vulgaris campestris alba*) and the mangold-wurtzel (*beta vulgaris campestris*) are allied to the sea-side beet, (*beta maritima*), which, like them, has a fleshy root, and is good for food. This analogy indicates the probable wants of the beet tribe, the probable utility of saline applications to the plant while growing, and the especial expediency of making experiments upon it with that common salt for which the *beta maritima* frequents the sea shore.

"The farmers of the Guildford Club (Surrey), in a recent discussion on the growth of beet, came to the unanimous resolution that, in their soils, experience had shown common salt to be a valuable promoter of the growth of this root, and that it was worthy of being generally recommended.

"The analogy above stated throws light on this result of practical experience, and points out to the improving experimenter the special value to him of a familiarity with such analogies: they not only modify and restrain the conclusions to which pure chemistry might erroneously lead him, but they indicate new paths of enquiry on which his chemical knowledge may exercise itself to the manifest advantage of scientific agriculture.

"7. THE PEA exhibits, among its several varieties, similar liabilities to be attacked by insects as the turnip does, and which, as in the case of the turnip, do not admit of easy or satisfactory explanation.

"I lately saw on the home farm of Lord St. John, at Melshburne, in Huntingdon, a field of winter peas, sown in November 1848, which had been all treated and manured alike, but on one half of which the seed sown was the early maple—a common field pea; on the other half the Ringwood marrow dwarf—a white pea. The latter was attacked at Christmas by the slugs, and in great part devoured so as to require filling up with fresh seed, while the former—the grey pea—was untouched by them. There may have been some other reason besides the difference of variety for this limited attack of the slug; but it is obvious that circumstances or liabilities of this kind may materially modify the effect of chemical applications made to our crops, and may be the often unsuspected cause of important discordancies in our results."

Professor Johnston also shows that the experimenter must know of what the soil consists (telling him of course, in case he should not, in his own popular style), the difference of soils from geological origin—chemical combinations in the soil and plants—the general principles of husbandry, with local or individual practice. He must possess local climatic knowledge, and know the composition of the several parts of animal bodies—how they are built up and sustained; the general functions of the animal body, and special structure of the digestive organs; the general relations between the soil, the plant, and the animal. Through the perception of such relations it is that, according to Professor Johnston, analyses are to be corrected, and an exact knowledge of the composition of the plant, the soil, and the animal, arrived at. The experiments which he suggests, he says, will rectify past results, and suggest researches. "The results of these, again, will send us back to revise our opinions, and repeat our analyses; and thus, by the joint aid of the laboratory, the field, and the feeding-house, will Scientific Agriculture be carried slowly but steadily forward."

It is on that same progressive principle of investigation we attach importance rather to the elementary portion of Dr. Johnston's work, which shows us how to experiment, than to the latter part, which criticises experimental work performed. We do so however, not to discourage, but to stimulate experiment, and, if possible, direct it aright. And from time to time, we shall not fail to return to those *comptes rendus*, as a mine of the most valuable truths within the range of REPRODUCTIVE SCIENCE.

The following is the list of Professor Johnston's works, referred to:—

- Experimental Agriculture; being the Results of the past and Suggestions for future Experiments in Scientific and Practical Agriculture; 8vo., 8s.
 Lectures on Agricultural Chemistry and Geology, 2nd ed.; 8vo., 24s.
 Elements of Do., 5th ed.; foolscap 8vo., 6s.
 Catechism of Do., 24th ed.; 1s.
 Instructions for the Analysis of Soils; 1s.
 On the use of Lime in Agriculture; 8vo.; 6s.
 Contributions to Scientific Agriculture; 8vo., 6s. 6d.

Wm. Blackwood & Sons, Edinburgh and London.

AGRICULTURAL SOCIETY OF LOWER CANADA.

We learn from the November number of the *Agricultural Journal*, that the Roman Catholic clergy in the Lower Province are using their influence in aiding the circulation of that useful periodical among the inhabitants of their respective parishes. The Archbishop of Quebec has issued a letter to his clergy, urging upon their attention the claims of agriculture; and the Bishop of Montreal is employing his influence in the same good cause. His lordship observes, in a letter addressed to Mr. Evans, the Secretary of the Agricultural Society, "that in the opinion of the clergy, your enterprise will not become eminently successful, until there are established throughout the different parishes, model farms, for the purpose of developing in practice the advantages which would accrue from an improved system of husbandry." We are glad to see the Roman Catholic clergy of the Lower Province evincing so laudable a spirit of patriotism; and we hope the clergy of other churches, both there and in Upper Canada, will not be slow in emulating so valuable an example. The agriculture of the mother country is deeply indebted, in each of the three kingdoms, to the resident clergy. Some of the most efficient improvers in practical agriculture, have been exemplary and zealous ministers of rural parishes. Of all secular employments, the culture of the earth, from the character of the occupation and its historical and classical associations, seems most in accordance with the tastes of the scholar and the duties and pursuits of the divine. We also hear that the directors have resolved upon having annual agricultural exhibitions; the first to be held at Quebec, in September next. We heartily unite with them in the wish, that they may receive such support "as to enable them to have such an exhibition as shall be worthy of Lower Canada, and fully equal to those that have taken place in Upper Canada."

REPORT ON THE STATE OF AGRICULTURE IN THE OTTAWA DISTRICT.

A circular, to the following effect, was addressed by Mr. Sheriff Treadwell to the officers and committee of the Ottawa District Agricultural Society, and to several influential farmers in the district. This circular was the means of eliciting several interesting communications from different individuals, which Mr. Treadwell forwarded to H. Ruttan, Esq., President of the Agricultural Association of Upper Canada, who has kindly placed them at our disposal for publication. We publish this month Mr. Higginson's sensible letter, on an important subject, and the others will appear in the commencement of our next volume.

L'Orignal, 20th of August, 1849.

My dear Sir,—This district having decided on sending no delegates to the Grand Provincial Agricultural Exhibition, at Kingston, on the 18th, 19th and 20th of next month, and being anxious to lay before the society all the information I can collect on agricultural subjects, may I beg that you will furnish me with a statement of the different kinds of grain you cultivate with the greatest success; the best time for sowing; the quantity of seed you put on an acre; the kind of manure used; the quantity of hay you generally cut; and what crops you consider most neglected that might be cultivated with success.

Please reply at your earliest convenience.

I am, sir, your most obedient servant,

CHAS. P. TREADWELL.

The following reply has been received from Thomas Higginson, Esq., Superintendent of Common Schools, Ottawa District.

Vankleek Hill, 4th Sep., 1849.

Dear Sir,—In reply to your circular of the 20th ultimo, I would beg to decline making any remarks on practical agriculture, being satisfied that you will receive information from different sources, of much greater value than anything I could lay before you. While I would express my regret, for not contributing to the general mass of practical and statistical knowledge, still there is one point to which I would beg to direct your attention, namely—the necessity of providing more effectually for the instruction of young men devoted to agricultural pursuits. While physicians have a medical board—while students of law and divinity are compelled to pass through many and severe studies—while even the common shoemaker is required to spend three or four years of an apprenticeship to fit him for his calling;—while these, and many other pursuits that might be mentioned, are guarded by custom, and fenced in by legislative enactments, how stands it with that most important class of our community, the agriculturalists? Are there any steps taken to prepare him for the discharge of his most important duties? No! With the exception of the little knowledge he acquires at the common school, the young farmer is left to push his way to successful

eminence in his profession, or to plod on in the barren and unfruitful footsteps of his unenlightened predecessors. To dwell on these gloomy facts, is superfluous. What is the remedy? Although many schemes might be proposed, and though much may and ought to be done, to change the aspect of affairs, still there is one plan of paramount importance which stands out and demands our serious consideration. It is this, there should be a *model farm* in every district, where the student of agriculture might avail himself of the knowledge, the experience, and the scientific acquirements of a thoroughly educated practical farmer. There should also be attached to the said farm a competent teacher, who would impart the common branches of elementary knowledge, with agricultural chemistry, animal physiology, and at least the rudiments of natural philosophy. With such an establishment in each district, it would be next to impossible that either the intellectual standard of our rural population, the financial affairs of our country, or the moral character of our people, would long remain so low as they now are. It will be said, that there is now a model farm at Toronto,* why not reap instruction from that establishment? The distance alone prevents many from availing themselves of its advantages; the expense of going is a drawback on others, and it may be truly said, that to overcome the distance and expense, is with many, if not impossible, at least a great inconvenience. But establish a model farm and school in every district, and many young men would pursue their studies there, who are now fruitlessly sighing for the *time* and the *means* to carry them to Toronto; and further, it may be urged, if a model farm is necessary at Toronto, it is of equal importance in every other district in the province—if it is of essential service to the young men of the western part of Canada, it would confer equal benefits on those of the eastern—if the agriculturists around the western metropolis *should* understand their business, so should every man to the farthest verge of our settlements, and thus would our resources be developed, our prosperity extended, and the circumstances of our young and hopeful country expanded and improved. It is necessary in a communication of this kind to be brief. Much might be said, and arguments adduced, which the writer cannot now enter upon, but he is convinced nevertheless, that as soon as public attention is directed to this most important subject, there will be a correspondent movement in the right direction, that must be ultimately crowned with success, and every lover of his country, every friend to humanity, prays for its consummation.

It will be enquired, where are the means to come from, to purchase a farm, stock and implements in every district? The writer is convinced, that if half the money that has been granted to agricultural societies had been expended in this way, it would have produced a richer harvest and

better fruit. But independent of this, now, when part of the endowment of King's College has been diverted from its original purpose, let it be applied to the object above stated, and although we may have fewer classical scholars, we will have a much more respectable, aye, and profitable body of *practical farmers*; not quite so much metaphysical disputation, but a much more general amount of useful knowledge and common sense.

To promote this great object, let the district councils, the township council, the agricultural societies, and farmers generally, petition the legislature *to establish a model farm in every district*, and let us seek the improvement of that long neglected part of the community on whose intelligence and well-being the prosperity of the country depends.

Yours, &c., T. H.

C. P. Treadwell, Esq.,

President Ottawa Dist. Agr. Soc.

ON THE IMPORTANCE OF AGRICULTURAL AND INDUSTRIAL EDUCATION.

There is an excellent paper in the second number of the *Irish Agricultural Journal** on the above named subject; a few extracts from which we have no doubt will be read with interest by many of our subscribers. The writer commences by observing that one of the principal causes of the depressed condition of Ireland, has been the absence of proper means of education in those practical arts, which must ever form the staple of the occupation, and supply the means of living, of the people. It is not enough to be convinced that the country possesses immense sources of latent wealth, but the great work to be performed is so to educate the *heads and hands* of the people, that those sources of national wealth may be practically developed.

"Feeling thus we have placed it before us as one of the most valuable uses to which this journal can be applied, to fix the attention of the people of all ranks on the absolute necessity of thoroughly learning the business by which they are to live. Labour, whether by mind or body, is the lot of the human race. From the statesman whose business it is to govern, to the peasant whose business it is to dig, every man who fulfils his duty to society should have an occupation, and should understand it. This truth, palpable as it appears when thus roughly announced, is however by no means of general recognition. We have in Ireland a large community who, unfortunately for themselves, thought they had no business, and acted under that delusion, and thereby have been the sources of the social gangrene and paralysis which has revealed itself by general pauperism and ruin.

* This is a mistake; there is no model or experimental farm at Toronto. The thing has only been talked of. In the Normal School, instruction is given in the science of agriculture, and something has been said about establishing a chair or lectureship of Agriculture in the University of King's College.—EDITOR OF AGRICULTURIST.

* This is a quarterly publication of great promise and merit, issued under the direction of the "Royal Agricultural Society of Ireland." We have just received a complete set, and shall avail ourselves of the opportunity thus afforded of occasionally submitting such extracts and information as we hope will prove interesting and useful to our readers.

The man who in this world foolishly thinks he has no task before him, or he who is found unable or afraid to do it, is but a useless weed, occupying the place of a worthier plant; and he must inevitably, by the pressure of society, be rooted out, or ploughed into the ground to rot for the enrichment of the soil by which his more useful and more energetic successor is to be supported. It is quite true that the errors of which the present condition of Ireland is the result, have been the growth of circumstances which now happily belong to history alone; but we must recognise that for the reparation of those errors it is by no means sufficient for those circumstances to have ceased to operate. Totally new conditions and new influences must be brought into action for their atonement: we must use our best exertions to base the future prospects of the country upon a system of enlightened and remunerative labour; we must endeavor that the mental and physical powers of her inhabitants shall be brought fully and harmoniously into play for her improvement, by the cordial co-operation of peasant and of noble, of landlord and tenant, and thereby suppress that growth of social disorganization which has its strongest roots in sloth and ignorance. But to do this each man should be made aware that he must have a business, and that he must learn it; that he must be industrious and be educated. He who remains unconscious of his position must be content to learn that society will progress without him, and that he cannot be allowed to live in sloth upon the fruits of the exertions of more useful and more estimable men.

Before, however, the duties of society can be fulfilled in Ireland by those to whom our observations specially apply, it is imperative that the great obstacle to improvement, the general absence of practical industrial knowledge, should be removed. In Ireland instruction must precede improvement; that is, if it be really wished that the improvement of the country should be for the advantage of its inhabitants—a postulate which, as we believe we are safe in assuming, we shall not place under discussion. The corner-stone of whatever social edifice is to be erected or preserved in Ireland, must be the practical instruction of the people; and we therefore believe that we require the aid of the Board of Education far more than of the Board of Works; and we further believe that for every shilling that any plan of practical instruction could cost in Ireland, there would be repaid to the state tenfold the sum in smaller charges for extra-police, national defences, and special commission trials.”

“Though we have above stated that, for observing the full results of education, we must watch the progressive development of the boy into the man, we still fully admit the general accuracy of the adage, it is never too late to learn; and we consider that in the improvement of this country the instruction of the adult population must occupy an important place. But that is not education: instruction is a totally different thing. In the boy you should form his mind, his habits of thought,

his morals; in the man you can only teach him to do properly a thing which he did not know how to do before. Even this will be doing a great deal under existing circumstances; and we consequently rank among the most efficient means of ameliorating the condition of Ireland, the practical instruction of the adult population.

We therefore consider that for the full educational improvement of the people of this country in industry, there should be the means afforded of supplying:—

- 1st. Instruction in practical agriculture to the adult farming classes.
- 2nd. Agricultural education in its full and proper sense to the rural population in the primary schools.
- 3rd. Agricultural education of a more advanced and scientific character in the academies or colleges in which the children of the middle and higher classes are educated.”

Under the head of practical instruction of the adult agricultural population, the writer pays a merited tribute of praise to Mr. Blacker, of Armagh, to whom agricultural improvement in Ireland is deeply indebted. This gentleman many years since proposed to the Irish landowners the importance of having experienced agriculturists to manage their estates; men capable of giving familiar oral instruction in the best systems of cultivation, adapted to the means of the people, and the wants of the country. We believe that Mr. Blacker's exertions were the means of forming several agricultural societies, and of eliciting a spirit of enquiry and desire for improvement among a considerable portion of the adult population. The agricultural instructors that were sent out last year under the patronage of his Excellency the Lord Lieutenant, and his Grace the Duke of Leinster as President of the National Agricultural Society, were the means, judging from their excellent reports, of creating a wide and deep interest in the cause of rural improvement. These men were wisely selected from among the Irish people, who consequently understood their peculiar habits and wants—and whose knowledge of agriculture *had been acquired in the field* as well as from books. It is to be hoped that this valuable agency will be continued. On agricultural instruction in Primary Schools our author observes:

“With the views which we have already endeavoured to express of the true nature and powers of education, it will be well understood, that it is to the operation of the national system of education we look for great improvement in the social condition of this country. Build up as you may with Corinthian capitals, or any other architectural ornaments, painted or gilded to entrap the admiration of the mere passer-by; if the building mate-

rial be unsound, if your cement does not set, if change of season opens the joints, and cracks admit the elements to work, your edifice will fall; the volutes and foliage of your capital will lie dirty and broken on the earth, when the pedestal gives way from want of soundness or of equilibrium. Thus, if the real materials of which the social edifice is constructed, be not all shaped to their berth, and picked sound and well seasoned, so will it also fall. Such shaping and seasoning is education; such fitting to the work is the idea that each one has in society, his proper place, his proper duties, and teaching him how to fulfil them. But abstract development of intelligence is not education; acquisition of the means of learning is not learning. "Train up the child in the way he should go, and when he is old he will not depart from it." Educate the child in morality and religion, and he will become a good man and a good citizen. Educate the child in habits and principles of industry, and he will become an intelligent and skilful farmer or artisan. "Train up the child in the way he should go," is therefore the voice of the people calling to those to whom education is entrusted; and for the practical regeneration of Ireland, it is indispensable that the child should be trained so that he may learn how to go to work.

Upon this cardinal point, as we conceive, the entire organization of our national system of education ought to turn. It is absolutely a delusion to exhibit a sum total of half a million of children being educated, when in reality those poor children, after being so educated, are almost inevitably swept into the chaos of practical ignorance and consequent idleness which engulphs the country. So many per cent. of the lower classes know how to read and write; but how many per cent. of those classes can earn their bread? The unfortunate little boys in Kerry, who found profitable employment for a time, in calculating areas and sides for the Ordnance Surveyors, at a half-penny a triangle, were again starved, when that highly scientific commission was brought to a close; for although certainly well educated according to collegiate ideas, they were not trained to their proper trade. Every national school in Ireland should be an agricultural school if situated in a rural district, and an industrial school when in a large town. Every schoolmaster in Ireland, every functionary of education, should be impressed with and inculcate the one idea, that the gangrene of Irish society is absence of practical knowledge; and that the remedy which it is for them to apply consists in practical education and the formation of business habits."

With respect to superior agricultural instruction to be imparted in the higher schools and colleges, the writer makes several pertinent observations. He insists on the supreme importance of placing all classes of the community under a system of industrial training. *Work*, either of the head or hands, or of both conjoined, is the essential condition of individual health and enjoyment, as it unquestionably is of all social progress. We can make room only for the following extract:

"We look to the colleges that have been recently founded by the government in Ireland for supplying to the middle and upper classes this industrial education of which we have endeavoured to depict the want. We quite feel that in order to assert the rank and position to which those new establishments are entitled, they must adopt an university system, and meet the competition of other colleges not by divarication but by improvement. We do not wish, therefore, to see the literary and scientific courses of those colleges superseded by purely industrial education; but we do think that those colleges will disappoint equally the intentions of the government and the expectations of the country, if, whilst they advance to the fullest extent the proper objects of general university education, they do not found schools in each college of a specially industrial character, embracing, on the one hand, the studies connected with engineering, and on the other, those belonging to agriculture in its most extensive and most improved form.

"The latter department, with which alone we shall occupy ourselves at the present moment, we would expect to include the fullest instruction in all those sciences which are connected with agriculture, as chemistry, geology, and botany. But also we would expect distinct instruction in the theory and practice of agriculture; in the natural history and diseases of the different breeds of cattle; we would include also land-surveying. It is not our object to sketch any plan of such studies, but only to put upon record the idea which we have long since formed, that it is principally by giving a practical and industrial character to the higher departments of education, that those new colleges can prove themselves truly useful, or earn the permanent approbation of the country."

We learn with sincere pleasure, from recent Irish papers, that it has been determined to connect a botanical garden, and a model and experimental farm with Queen's College, in Cork; a sum of £5000 having been allocated by the Lord Lieutenant for this most valuable object. Earnestly is it to be hoped that the other new colleges will follow the example.

AGRICULTURE IN NEW BRUNSWICK.

We have been favoured with a copy of the *Courier*, containing the annexed report of the Saint John County Agricultural Society, a document which comprises several topics of interest and instruction. We shall make a few selections as our space admits.

During the past year monthly meetings had been held for the discussion of agricultural subjects. These meetings had been well attended, several useful papers read, and a circulating agricultural library commenced. The directors having learned that Professor Johnston was about to visit the United States, petitioned the Governor to invite him to New Brunswick for the purpose of taking a general survey of the agricultural and mineral

resources of the province. This we learn the Professor is now doing, and we shall be looking forward with much pleasure to his report.

The annual fair and exhibition took place on the 27th of September, the unfavorable state of the weather prevented a large attendance; His Excellency the Lieutenant-Governor was present. Four samples of wheat were shown, one weighed 64 lbs., and two over 60 lbs. a bushel. The oats weighed 46, 44 and 42 lbs. a bushel. The turnips, carrots, mangel-wurtzel and potatoes are described as being very superior. There is but little butter and no cheese made in the county. The Directors recommend large premiums to be offered for these important articles.

The Society had again imported from England and Scotland large quantities of turnip, carrot, beet and parsnip seed, together with wheat, barley and oats, all of which was readily sold, without loss; the results of these importations have been most satisfactory, and are stated in detail in the appendix, to some of which we may refer our readers in a future number. A machine for making draining pipes is about being imported from England, and a number of premiums have been offered for the most successful efforts at draining. Premiums were awarded for various root and grain crops, with one for the best essay on the preparation and value of manure. Branch societies had been organized, and one is already in successful operation at Loch Lomond. An oat, grist and carding mill had been established at Golden Grove, to which had been awarded £25 by the Society. The Directors had not been successful in introducing a bone-mill, which is felt would be a great desideratum. Besides the bones that are wasted, "large quantities are annually shipped off, to be returned in the shape of cabbages and flour." The utter waste of this precious manure is inconceivable. The Directors, in accordance with last year's report, petitioned the Legislature to appoint a Central Board, or Provincial Society, and to establish agricultural lectureships and schools, but nothing was done.

This arose chiefly from the opposition of the farmers in the Legislature, they being decidedly opposed to any additional expenditure for the improvement of agriculture. Three-fourths of them actually voted against the invitation to Professor Johnston! The Directors recommend that renewed efforts be made to induce Government to furnish means of education suitable to young men designed for farmers, by the formation of one or more large schools, with model farms attached, and by the science of agriculture being taught in all the common schools. Seminaries are maintained at the public expense for the education of those intended for other professions; and as farming is second to none in importance, it is neither fair to the farmers nor for the general good that this occupation should be deprived of those benefits which science and knowledge can afford.

The Directors have to report, in relation to the crops in the county for the past season, that hay, except on the marshes, was very light, probably not half an average, very little wheat was grown, but, where tried, yielded abundantly without rust

or weevil. Barley has not been successfully cultivated, probably because the land has not been put in a proper condition for it, that crop requiring a very fine tilth. Oats have been a good crop. Buckwheat has been extensively grown, and yielded abundantly. Potatoes kept quite free from the disease until fully grown and nearly ripe, and, in general, were not affected at all. In some sections, however, especially in the vicinity of this city, the disease made its appearance with all its former virulence. After blackening the tops, it struck down to the roots, and in different fields from a quarter to a half were lost. It appears, therefore, that the disease has not yet taken its departure, and that the potato ought not to be depended on as the only root crop.

Carrots and turnips have been extensively cultivated, and notwithstanding the extreme drought, are generally a good crop. Mangel wurtzel and parsnips, although better adapted for cows and pigs, and quite as easily raised as the others, have not been much tried. The English horse-bean or Heligoland bean has been grown for several years on one or two farms, and when planted early have ripened and yielded well. The white bean and field-pea have scarcely been tried, which is to be regretted, as they are a sure and profitable crop, and excellent alike for the table and as food for cattle.

The following general remarks are the results of, or suggested by, the discussions at the monthly meetings of the Society:

The state of agriculture and those depending on it in this Province, is admitted by all to be in great need of improvement. There is little or no farming capital: an exhausting mode of cultivation prevails, by which that little is becoming less. There is no surplus produce on which to feed those who would manufacture for us; nay, farmers do not raise even enough for themselves; and it is the reply to those who would wish to introduce draining, deep ploughing, a proper rotation of crops, and plentiful manuring, whereby the crops would be more than doubled; Oh, but there are no markets!—we have no capital!—we cannot afford to pay for labour!—we cannot sell at a remunerating price what we at present produce!—and why urge us on to what would be our ruin?

Were we seeking popularity, or desirous of gaining the favour of those to whom we address ourselves, we should probably, like the other quacks of the day, say to them that their present state is caused by an unpropitious climate, or a sterile soil, by errors of omission or commission on the part of Government, by a want of capital or a want of markets, and would urge them to seek for protection or free trade, toyism or responsible government, reciprocity, independence or annexation, as a cure for all their evils.

But we have other ends in view, we wish to raise the agriculturists of our country to the condition which belongs to them, to that of intelligent, prosperous, high-principled men, who know their rights and their duties, and will fearlessly assert the one and faithfully perform the other, and must therefore say, that from all that we have seen or can judge, we are sincerely of opinion,

that general prosperity can alone be obtained by a general increase of individual intelligence, energy, enterprise, industry, and public and private economy, and in no other way, and by no other means whatever, and each one who desires to bring this about must begin at home, must do the duties which lie nearest to him, must seek out and endeavour to fulfil the purposes for which God has placed him in this world, and resolve, that the blame of being one of a spiritless, indolent, extravagant, and poverty-stricken people, shall not lie at his door. Let such a spirit but be diffused amongst us, and with our fertile soil, healthy climate, and vast natural resources, we are prepared to run a race with the best nation on the face of the earth.

But increased production will create markets: and in this way—as soon as a surplus of provisions is afforded, the farmer, who was before his own blacksmith, shoemaker, weaver, tailor, doctor and minister, finding out the advantages of a division of labour, exchanges his for the labour of others. Centres of those thus employed, or towns and villages, are gradually formed as supply and demand increase. Machinery is called in to aid, and then come the large manufacturing towns.

We are at about the end of the first, and beginning of the second, period. Villages are becoming visible in every direction—at Hampton, the Bend, Dorchester, Sackville, Sheffield, Woodstock, &c.

Some think, and perhaps they are right, that by a certain course of legislation, called “protection to home industry,” the progress towards prosperity can be much hastened; others, that trade should be left to seek out and follow its natural channels, and that Government cannot interfere with the industry of one class, but at the expense and to the injury of others. As an agricultural society, we discard politics, and cannot, therefore, properly express our opinion on either side; whatever way, however, is taken, a speedy progress to prosperity can only follow an increase of enterprise and intelligent industry.

In inquiring into the causes of the backward state of agriculture, the small amount of accumulated capital, in proportion to the business done, and the want of energy and enterprise in the people, it is obvious that, like rich men’s sons, we have had so many advantages bestowed upon us, that our energies have been cramped. Our forests have been to us like the gold mines to Spain—they brought money so easily, that not knowing the value of it, we let it go as it came.

The gambling nature of the trade in timber operated also to seduce people from the more slow but sure modes of making a living. The profits of farming—nay, in too many cases, the farms themselves have been sacrificed to the insatiable craving for an easy and quick way of making money which this trade seemed to offer.

From the ease with which the timber growing upon every farm could be converted into money, the population have also acquired a taste for certain descriptions of food, not in themselves more nutritious or agreeable to the taste than the grains and other produce of the country, but which habit

has rendered so essential that their use is persisted in, now even when the timber is gone, so that the farmer, from whom we ought to expect not only all our provisions and clothing, but articles of export to pay for the few foreign luxuries we require, and cannot produce, are themselves the chief consumers of imports, without furnishing a single export in return.

It may be profitable to us to compare notes with our friends across the lines—they have no advantage over us in soil or climate, and we are all of the same blood. In former times, like us, they attended to lumbering, to the neglect of their farms.

Some thirty years ago they were very much in our circumstances; the lands worn out, no markets, and unable to compete with the produce of the new and fertile western country. The western fever seized them, and an almost general desertion of the farming population took place. We have read accounts of the northern States at that period, which might be applied word for word to our own country at this day. In process of time, numbers of the emigrants returned, in impaired health, having found out that a fertile soil and mild climate (competition and cost of transport rendering money-making out of the question) were dearly bought at the price of health. A new stimulus was given to agricultural pursuits, better modes of culture were adopted, improved stock imported, a sound education made accessible to all, and they are now a prosperous and happy people.

Let us compare their present state with ours—perhaps we may profit by taking a leaf out of their book. While they are furnishing a surplus of butter, cheese, beef and pork, as an export to the English market, we, with equal facilities, do not produce enough for ourselves. While we are grumbling over our long winters, wasting our time in junketing, lounging about taverns or law courts, or what is as bad, cutting logs which will require the best part of the summer to get to market, and in the end run us in debt; their young men and maidens, taking the advantage of every water-power, and daily inventing new machinery, are making palm-leaf hats, pails, brooms, rakes, and axes, which they hand over to us in exchange for our dollars. While we are pampering ourselves on Genesee flour and Yankee pork, the very people who furnish us with these articles pride themselves in living on corn, rye, and buckwheat. While they willingly tax themselves to support a school system which surpasses all that the world has ever seen, and by which every child may obtain the education of a gentleman, we dole out such miserable pittance that no teacher who has strength to be a labourer will stay with us. While they give all honour and respect to the intelligent workers of all classes—while their farmers take pride in their occupation, and keep their scorn for the loafers who seek to live on the labour of others—we despise the horny hand and homespun coat, and those only who are fit for nothing else become farmers. While they love their country and the wise institutions which their own manly exertions have founded, and stir up their national pride by bragging about themselves and

all that belongs to them, we, with natural advantages quite equal to theirs, with institutions such as we are pleased to make them, and which are inferior to theirs only through our own lethargy and stupidity, are contented to grovel on year after year, in servile submission to those evils which are the effects of our own spiritless and short-sighted selfishness, without the power to make that vigorous and united effort which alone is required to place us in a position quite equal to theirs, in the meantime, grumbling at and disparaging a country, a climate, and a soil, which are but too good for such thankless ingrates.

THE ENGLISH AGRICULTURAL SOCIETIES.

From the reports we have seen of the autumnal meetings of these societies, the complaints of the depressed condition of the agricultural interest, arising from the extreme low prices caused by excessive foreign importations, appear to have been both loud and general. The same is true of Scotland. As to Ireland, the depreciation in the value of produce, combined, no doubt, with other causes, has already diminished the circulating medium of the whole kingdom more than one-third; which circumstance is alone sufficient to account for much of the distress and misery of that unhappy land. As it might naturally be expected, the depressed condition of agriculture was mainly ascribed by the generality of the speakers at these meetings, to the effects of the free-trade policy. Here and there a solitary voice was to be heard expressing a hope "that better times are coming," and that British industry, capital and skill must ultimately triumph over all difficulties. This may be so, but how many thousands will be ruined in the meanwhile! One thing is certain, that the repeal of the corn-laws has raised the value of money just in proportion to the depreciation of all kinds of farming produce—that is to say, from twenty-five to thirty per cent. The British farmer must now raise 130 bushels of grain, to meet a given money amount of rent, taxes, and interest on borrowed capital, which, two years ago, when most or all of these imposts had been contracted, would have been met by one hundred bushels. The same remark holds good with all kinds of live stock, and tenants' property in general. Free trade, if persisted in, must produce eventually great fiscal changes in the mother country, and will put to the severest test the connection of many of her colonies. This great, and, as it has appeared to many, hazardous experiment, is yet very far from being completed. Canada is now placed in a most anomalous and disadvantageous position, as an integrant portion of the British empire; and if we should not succeed in our attempts for reciprocity with the United States, we shall have most clearly an indisputable right to protection in the home market. We have only to use our best exertions, and wait patiently, though it be most anxiously, the result.

Lest we should be accused of taking a one-sided view of this great question, we here insert some observations of Mr. Brown, one of the members

for South Lancashire, at a recent meeting of the Liverpool and Manchester Agricultural Society. Mr. Brown is a zealous and consistent free-trader, but we cannot vouch for the perfect accuracy of all his data. The reader must think and judge for himself:—

Mr. Brown, M.P., in responding to the toast of the county members, said he was not a practical farmer, and therefore it would be bad taste in him to endeavour to enlighten them on farming subjects; but as he had been met with enquiries from both landlords and tenants as to the effect which free trade might have upon rents, perhaps it would be well if he quoted some statistics to show as far as possible the competition which might be expected from abroad. Austria, which was a corn-growing country, produced 13 bushels to the acre, France 14 bushels, America 18 bushels, Poland 20 bushels (but that had to go to Dantzic for shipment), and England was estimated to produce from 28 to 30 bushels to the acre; so that it would be seen we were a match for any of them on that ground. Then as to the prices at which these countries could afford to supply our market. He had brought with him a memorandum, which showed the average of wheat in the United States since 1785. The averages were those of ten years, and the prices those of the Philadelphia markets.

From 1785 to 1794.....	£1	17	0	per qr.
" 1795 to 1804.....	3	2	0	"
" 1805 to 1814.....	2	15	6	"
" 1815 to 1824.....	2	10	4	"
" 1825 to 1834.....	1	15	4	"
" 1835 to 1844.....	1	19	8	"

That gave an average of 49s. 8d. a quarter for the lowest period, and to this must be added 8s. to 10s. for freight, charged to profits. Now he thought they could meet that. But whatever might be said in regard to grain, foreigners certainly could not compete with us in the green crops. As to the quantity of live stock which they could send, it was hardly worth naming. Kane, in his "Industrial Resources of Ireland," had shown the vast extent of our home supply. Now, with respect to Russia, fears had been expressed that we would get large supplies of wheat from Odessa. With respect to that, we had nothing to fear; her agriculture was on the lowest scale of all, and very little wheat found its way through the Straits of Gibraltar, unless the prices were remunerative here. The poor Russian boor brought his corn to market on a miserable cart, drawn by oxen; if he could get a pittance to pay his rent, it was all he wanted. There was no capital there applied to agriculture. Under all these circumstances, he thought, with our good roads—with the immense capital which we could apply to the cultivation of the soil—with the Saxon energy which we possessed—with the intelligence that he saw in that room (for he had just been telling the president that he saw a great many intellectual faces around him), with our knowledge of chemistry, and with the various other advantages that we had, he should not be surprised to see us, instead of being an importing country, if we put our shoulders to the wheel, become once more an exporting country.

At a meeting of the Saffron Walden Society, in Essex, Lord Braybrooke in the chair, the Rev. Dr. Buckland, the eminent geologist, spoke as follows:—

In the Midland districts of England, where the spirit of improvement had travelled to the banks of the Trent, in that fine manly country where God and nature had done so much, there man had done the least. Let them look to the country between Birmingham and Derby, and see the state of the fields; to the Vale of Taunton Dean, where he saw lands that would produce forty-six

bushels an acre, if drained, but they were undrained, and did not produce more than twenty-three, for the farmers were as stupid as their oxen. He was not disposed to take a gloomy view. They had before them the means of increasing, by the application of science, the produce of the land;—for if they could get forty bushels an acre instead of twenty, that must tend to relieve their difficulties. If they looked at the geological map of England, they would find that one third of the whole was made up of clay, and there was not a single acre of that land, the produce of which, if properly drained, would not after five years be doubled. He had bought a farm of 200 acres, and instead of acting like a foolish squire, and attempting to lay wilderness to wilderness, he had spent £600 on it in drainage in six weeks; before it only produced nine or ten ricks of corn, and now it produces twenty or thirty. The parts that were drained produce double the quantity produced on the land not drained, although they were only separated by a thorn hedge, put up for an enclosure. This was not to be sneered at as theory, it was real practice. This was better than keeping the money in their breeches pockets, and saying they could not employ the labourers. If they had not the money in their pockets for drainage, it was their own fault, because £200,000 had been voted by Parliament, to be lent for that purpose, at reasonable interest, and to be repaid in twenty years. If by good management in these matters, drainage and skilful farming, they got better crops, that would tend to relieve the agricultural distress, which undoubtedly prevailed in this country.

At a large meeting of the Agriculturists of the County of Essex, Mr. Disraeli explained in detail the principles of his plan for relieving the farming interest from its present depressed condition, and thereby promoting the general prosperity of the country. By financial retrenchment in all government departments, and a fixed import duty on the productions of foreign countries, (the colonies we imagine to be excepted of course,) a large sinking fund was to be created, which would have the effect of rendering money cheap, thereby enabling the farmer to obtain the amount of capital necessary for agricultural improvement at a lower rate of interest. The equalization of taxation forms likewise a prominent feature of the scheme. Mr. Disraeli concluded his address with the eloquence for which he is remarkable, in the following words:

There must, if there be a *bona fide* sinking fund—there must result a gradual but a certain, and every year a diminishing amount of burdens on the country: It will not be the commercial section of the community, or even, perhaps, some one commercial house, that will gain the advantage of this measure; but every class in the community will, by the action of the sinking fund, obtain relief. The next effect it will have is on the price of capital—the interest of money—a subject of great importance to the industrial classes. Now these advantages you will obtain; you will have capital abundant—you will have every class feeling their burdens diminishing. How are you to do it? Why, by making the foreigner pay a toll on his commodities. (Loud cheers.) Now, am I right in supposing that the yeomen of Essex will adopt these principles? (Loud cries of "Yes, yes.") But, am I right in supposing that the yeomen of Essex mean to act upon them? (Tremendous cries of "Yes, yes.") Because we live in times when cheers round a convivial board will not save the country. In old days we assembled to commemorate the victories we had won and the foes we had baffled.—But we meet now in the hour of difficulty and danger;

and we must meet to no use, unless we can devise some plan which we shall follow up with a confirmed resolution to conquer. If you resolve to act upon these principles, permit me to tell you, not as a model, for you do not require such an incentive, but rather as an instructive hint, what we have done in the county in which I live. Impressed with the two great principles—first, that taxation should be equalised; and secondly, that public credit should be maintained, we have formed a society for the relief of real property; feeling convinced that real property never will be relieved except on the policy of these two principles which I have laid down. I ask you to do the same. From your society petition the House of Commons for equal taxation, to which you are entitled—a justice which no one denies; call upon Parliament to cease tampering with the fiscal fortunes of England, which has been too long indulged in—make up your mind to pay your debts—establish the same rule of morality for a nation which exists for individuals—and the certain and inevitable consequence will be, that you will not only introduce a principle of fiscal morality, which has been too long absent from the counsels of the Legislature; you will not only make capital abundant to those classes who require it, and who have a right to ask for it—and to no other class do I refer—but you will do more than this; you will place your ancient and noble industry in a just and legitimate position. I have been told that the agricultural interest don't know what they want—that they have no motto upon their banners. Write on your banners "Justice and Honesty," and depend upon it the nation will sympathise with you. It will rally round such professions, backed by such practices as you counsel and recommend. I feel persuaded that if the county of Essex shall act with spirit, and drive home these two points—if they demand from the Legislature equal taxation, which now, so far as reason and argument are concerned, is a settled question,—if they will counsel in an admonitory voice imperial morality, that the first and greatest principle of finance is the diminution of the national burdens, and that the only legitimate mode of doing this is by diminishing the public debt, and that the easiest, the most obvious, the justest course to do that would be that the untaxed foreigner should contribute his quota—I am convinced that that is a policy which must govern the country; if, indeed, the country be worth redemption. I have treated this subject economically, because the opinion of the times is inclined to economy, and because that way of treating it is rather endured by us in our forlorn position in consequence of the legislation which we have had in the present day. But I never can consent that this great question of the land of England shall be argued on such narrow and limited considerations. In this age of perfidy and cowardice I am not ashamed to say that I am prepared to uphold and maintain the constitutional preponderance of the land of England. I do so because I recognise all the institutions which have made our country so eminent as having their root and origin in the land—that immemorial throne which reconciles the majesty of the law with the freedom of the subject—the sacred spires of that patriot church that has at all times guarded the popular privileges and formed the national character—the brave front of those high spirited Parliaments that have educated the people of England in a comprehensive and practically enlightened freedom; because I recognise in the territorial principle the real and only source of stability in the state; because in the laws, the customs, the manners, the influence, the traditions connected with the land, I see the origin of that noble and indefatigable ambition that prevades all classes of the community—the true aristocratic principle that has taught every Englishman—at the plough or at the loom—in the gilded saloon or in the ermined senate—that it is his privilege to aspire and his

duty to excel. (The hon. member resumed his seat amidst prolonged cheering.)"

PROVINCIAL AGRICULTURAL ASSOCIATION.

To the Editors of the Agriculturist.

GENTLEMEN,—I shall be obliged to you to insert, in the December number of your valuable journal, the enclosed Resolutions which I intend to propose at the February meeting, as Amendments to the Constitution of the Provincial Agricultural Association.

In taking this step I have but one object;—to define as accurately as possible the respective duties of the Board of Directors, and of the Local Committee, with a view to the adoption of a better and more uniform system of management.

In publishing these Resolutions so long before the February meeting, the Directors and Members of the Society will have ample time to examine them, and I shall be willing to adopt any amendments that may be considered better calculated to effect the desired object.

It will be admitted, I believe, by every gentleman who has taken part in the management of the previous Exhibitions, that the present system has not worked well, and that it places both the Directors and the Members of the Local Committee in an unfair position before the public.

In drawing up these Resolutions, I have followed as closely as possible the system of management adopted by the Royal Agricultural Society of England, the details of which were kindly furnished me by Professor Johnston of the University of Durham; Professor Johnston assured me that, in Great Britain, the Royal Society's system of management is considered much superior to that adopted by any other Society.

In clause 20 I have provided that no Member of the Board of Directors, or of the Local Committee, shall be concerned in any contract, &c. This valuable clause I have copied from the proposed Bye-Law of our worthy Vice-President, Mr. Marks.

I am Gentlemen,

Your obedient Servant,

JOHN WETENHALL.

Toronto, Nov. 30, 1849.

AMENDMENTS TO THE CONSTITUTION OF THE PROVINCIAL ASSOCIATION, TO BE PROPOSED AT THE MEETING IN FEBRUARY, BY J. WETENHALL, ESQ., PRESIDENT FOR 1850.

1. Be it enacted, That the Board of Directors, or a committee thereof, shall meet daily during the Exhibition, and shall transact all the business connected therewith which shall not have been previously entrusted to others, and that all questions of importance which shall arise during the Exhibition shall be submitted to the said Board, whose decision shall be final.

2. Be it enacted, That the Ex-Presidents of the association shall be ex-officio members of the Board of Directors.

3. Be it enacted, That the Secretary shall if necessary make frequent visits previous to the show to the place selected, and if required shall remain there two or three weeks before the Exhibition takes place.

4. Be it enacted, That the Secretary shall be a member of the Local Committee as well as of every sub-Committee thereof.

5. Be it enacted, That the Secretary shall (subject to approval by the Board of Directors) prepare the necessary account books, superintend the entering of articles for exhibition, the preparation of the Judges' books, and the pay lists, the issuing of badges and tickets of entrance into the show grounds, and all other matters

connected with the management of the show which are not of a local character.

6. Be it enacted, That the Secretary shall have charge of all account books and other documents relating to, and being the property of, the Society.

7. Be it enacted, That the Secretary shall (subject to approval as aforesaid) engage the services of competent persons to act under him as heads of departments: one to take charge of the ticket office, another of the office for general entries, &c., and in making his selections the Secretary shall have in view the probability of obtaining the services of the same parties at future Shows, in order to establish as far as practicable a uniform system of management.

8. Be it enacted, That the Board of Directors shall appoint an Acting Treasurer, who shall attend at the Show-ground during the Exhibition, and for as many days before and after that time as the Board of Directors or Committee thereof may require.

9. Be it enacted, That the said Acting Treasurer shall give such security for the due performance of his duties, and shall receive such remuneration as shall be respectively decided upon by the Board of Directors.

10. Be it enacted, That it shall be the duty of the Acting Treasurer to take charge of all monies collected by the Society previously to the day of Exhibition (excepting such monies as are collected by the Local Committee for local purposes); to take charge of monies collected at the gates of the Show-ground as well as of monies paid for badges, subscriptions of members, tickets for stock, &c.

11. Be it enacted, That the Acting Treasurer shall pay the premiums at the time appointed by the Board of Directors, and shall pay such premiums in accordance with the pay lists to be furnished him by the Secretary.

12. Be it enacted, That the Acting Treasurer shall, at as early a day as practicable after the Exhibition make out a full and fair statement of all monies received and disbursed by him, (audited as the Board shall direct,) and shall deliver the same to the Secretary of the Association; and shall deposit the balance of monies received, if any, in the Bank of Upper Canada, to the credit of the Association.

13. Be it enacted, That for the purpose of assisting the Directors in making the necessary arrangements before and during the Exhibition, a Local Committee shall be appointed, to consist of not more than _____ nor less than _____ which Committee shall be appointed by the Board of Directors at the February meeting, unless previously elected at the general meeting.

14. Be it enacted, That the President and Vice Presidents for the year, as well as the Ex-Presidents, shall be ex-officio members of the Local Committee, in addition to those appointed by authority of the preceding clause.

15. Be it enacted, That the Local Committee shall have power to appoint sub-committees to superintend the several arrangements devolving on them.

16. Be it enacted, That the Local Committee shall appoint a local Secretary and a local Treasurer, and shall require from the said Treasurer suitable securities for the due performance of his duties.

17. Be it enacted, That the local Committee and its officers and agents shall have power to collect subscriptions for the purpose of paying the local expences, and shall pay all monies so collected to the local Treasurer.

18. Be it enacted, That the Local Committee shall select the ground for the Exhibition, and contract for the fencing in of the same, as well as for the erection of the necessary Buildings, Booths and Pens, and provide provender for Stock, and make such other arrangements as may be necessary for the safe keeping of all articles exhibited.

19. Be it enacted, That the Local Committee shall make arrangements with steam-boat Proprietors and

rail-road Directors, in order to facilitate access to the exhibition: and shall make similar arrangements with hotel Keepers and other Individuals, so as to have good accommodation provided for visitors at the usual rates of charge.

20. Be it enacted, That no member of the Board of Directors or of the Local Committee shall be concerned in any contract or work of profit directly or indirectly, as surety or otherwise, ordered to be performed for the use of the Association.

AGRICULTURAL ASSOCIATION OF UPPER CANADA.

NOTICE IS HEREBY GIVEN, that a meeting of the Agricultural Association of Upper Canada will be held on Wednesday the 20th day of February next, at 10 o'clock in the forenoon, at the Court House, in the city of Toronto, for the purpose of considering certain amendments to the Constitution of said Society to be then and there submitted.

By order.

GEO. BUCKLAND, *Secretary.*

Toronto, Nov. 28, 1849.

STEAM APPLIED TO AGRICULTURE.—The following remarks on points that we deem worthy of more attention from Agriculturists than they generally receive, were made by Lord Brougham, at an agricultural meeting lately held at Penrith:—

He had been very much delighted to see so good a show of valuable engines, some of them most ingenious and very reasonable in price, for churning, hoeing, threshing, and so forth. A friend of his, a practical Agriculturist, informed him that a very important step had been taken for the purpose of saving labour, and thereby economising the expense of production, an object which, with care and judicious mechanical contrivances, was always in our power even when we could not increase the fertility of the soil. The most valuable experiments had been made in the application of steam on a small scale. People were apt to suppose that steam could only be employed on a gigantic scale, for locomotion on railways, or in great manufactories of various kinds; and of course in proportion to the size of the engine was its expense both in first cost and in working it by means of fuel. But in the town of Glasgow a person had been able to have a steam engine not larger than a tea-kettle—he had seen such an one himself; in one instance he had heard of one not larger than a teapot, which was quite capable of driving a small turning-lathe on which a cutler could work. Still it might be said this power had only been employed in manufactures; but it might with the greatest possible advantage in saving labour be introduced into agriculture as well as manufactures. Thrashing machines, straw-cutting machines, and various other engines, might be worked most advantageously by the application of steam; and he had the most confident, sanguine hope, that he should live to see this new and most valuable extension of the application of steam. What reason had they to doubt that the same wonderful engine which Watt shewed applicable to pump up water from the bowels of the earth, split rocks in pieces, or manufacture the machinery of a watch, shall be applied to something between the two—to some of the agricultural works which could now only be executed by dint of well-paid human labour! He could not help thinking the suggestion well worth the attention of Farmers, that a better system of keeping their accounts, as tending to economy above all, and to regularity, a great source of wealth in itself, should be more generally adopted. He hardly ever knew a great good Farmer on a considerable scale, or one on a moderate

scale, who did not to a certain degree perform the office of his own accountant, keeping a regular set of books, as tradesmen were accustomed to do. It was as necessary for the Farmer, the manufacturer of corn, as it was for the manufacturer of cotton twist or steel blades, to keep accounts of all the details of his business. He never could tell exactly what state he was in—what was his expenditure, what were his gains or losses, without regular and systematic book-keeping. He therefore strongly recommended his agricultural friends, although they might not be so well educated as those he now addressed, and started back from pen and ink, to adopt a good system of accounts.

CONGELATION OF WATER.—Gardeners may learn many useful things by taking a lesson now and then from Natural Philosophy: for instance, it teaches us that in general liquids expand and contract in proportion as they are heated and cooled; but to this law there is a remarkable and anomalous exception in regard to water. When a large thermometer tube is filled with water of the temperature of 60 degrees and placed in a cold situation, or in a freezing mixture of ice and salt, the water goes on shrinking in the tube till it has attained the temperature of about 40 degrees, and then, instead of continuing till it freezes, as is the case with other liquids, it slowly expands, and actually rises in the tube till it congeals. In this case the expansion above 40 degrees and below 40 degrees seems to be equal, so that water will be at the same bulk at 48 degrees and at 32 degrees. This anomalous expansion of water by cold is productive of some important consequences considered as a natural operation; for if water, like other fluids, went on increasing in density till it froze, the consequence would be that large bodies of water, instead of being only superficially frozen in winter, would be converted throughout into solid masses of ice. Let us take a fresh water lake as an example:—The earth being in winter warmer than the air, the heat is withdrawn from the surface of the water by the cold breezes that blow over it, and the whole body of water has its temperature lowered to 40 degrees, which is the point most congenial to fishes and other aquatic animals. The cold now continues to operate upon the surface of the water, but instead of diminishing its bulk, and therefore rendering it heavier than the warmer water beneath, it expands it and renders it lighter, so that, under these circumstances, a stratum of ice-cold water at 32 degrees will be found lying upon the mass of warmer water beneath it at 40 degrees. The influence of the cold continuing, the surface of the lake will soon freeze, but the water immediately under the superficial covering of the ice will be found comparatively warm, and as water is almost a non-conductor of heat, it will be a long time before the ice attains any thickness, and the whole body of water, if of any depth, can never freeze throughout. Indeed, it will be obvious, that the retardation of freezing will be proportional to the depth of water which has to be cooled, and hence some very deep basins or lakes are scarcely ever even covered by ice.—*Scottish Farmer.*

THE evils of the world will continue until philosophers become kings, or kings become philosophers.—*Plato.*

GOODNESS OF HEART is man's best treasure, his brightest honour, and noblest acquisition. It is that ray of the Divinity which dignifies humanity.

PEOPLE who endeavour to attract that attention by dress which they cannot obtain by their intrinsic worth, resemble the soap balloons blown by children; the thinnest bubbles are invested with the brightest colours.

Horticulture.

DOUBLE CRIMSON CURRANT.

This is a new and beautiful shrub, and being easily propagated and of a hardy nature, it deserves the attention of amateurs who desire to possess in their collections the choice and the rare. This shrub is more ornamental than useful, but the same may be said of a thousand of nature's lovely productions, the absence of which would make the earth waste and dreary in the eye of the most intelligent admirers of the beautiful, or even the most determined stickler for utility.

We copy the following description from the *Horticulturist*, an American work of high repute:—

This new and charming variety of the Crimson Flowering Currant, is a seedling, raised in Scotland, from *R. sanguineum*, by Mr. David Dick, gardener to the Earl of Selkirk. It is but just introduced into this country; but since, like all the currant genus, it is very easily propagated by cuttings, we hope speedily to see it in every good collection of shrubs.

The blossoms are larger than those of the single variety, the racemes from three to six inches in length, and the effect of the shrub, when laden, in spring, with these fine pendant blossoms, is very rich and striking. Its flowers open, according to *Paxton's Magazine*, about three weeks later than the parent species.

Ribes sanguineum, north of New York, should be planted in a somewhat shaded situation—on the north side of walls or buildings, or in places where it is partially shaded by evergreens. In such sites, it is perfectly hardy. It is quite likely that this double variety, being a Scotch seedling, will prove perfectly hardy with us in any situation.



AMERICAN POMOLOGICAL CONGRESS.

We stated in our last that the two fruit conventions, in the United States, had merged into one, under the above title. We learn from the November number of the *Horticulturist*, that the late meeting in New York was numerously attended by delegates from almost every section of the Union. Considering the unfavourable character of the past season, the exhibition of fruit exceeded the most sanguine expectations. A new general fruit committee was formed for the whole country, consisting of the chairmen of the committees of the different horticultural and pomological societies throughout the United States and Canada. Much time was

devoted to the consideration of a "rejected list" of fruits, such as were thought unsuitable for general cultivation. This important duty appears to have been performed with proper care, and after much deliberation. As the subject of fruit is one of annually increasing importance in Canada, and the demand for fruit trees, we are told, is already much beyond our means of supply from our own nurseries, we insert for the benefit of our readers the list of fruits adopted, as also the one rejected, by this association:—

LIST OF FRUITS FOR GENERAL CULTIVATION.

Pears.

Vicar of Winkfield,
Uvedale's St. Germain, or Pound,
Louis Bonne de Jersey,
Uvedale's St. Germain, for baking.

Apples.

Bullock's Pippin,
White Seek-no-further,
Winesap,
Lady Apple,
Wine Apple,
Red Astrachan.

Apricots.

Moorpark.

Rostiezer,
Andrews,
Fondante d'Automne,
Fulton,
Urbaniste,

Swaar,
Porter,
Fameuse,
Vandevere,
Hubbardston Nonsuch,
Danver's Winter Sweet,

Large Early,
Breda,

Nectarines.

Downton,
Elruge,
Early Violet.

Grapes,

(for culture under glass.)

Black Hamburg,
Black Prince,
Black Frontignan,
Grizzly Frontignan,
White Frontignan,
White Muscat of Alexandria,
Chasselas of Fontainebleau,

(for open culture)

Isabella,
Catawba.

Currants.

Red Dutch,
White Dutch,
Black Naples,
May's Victoria,
White Grape,

Gooseberries.

Houghton's Seedling,
Woodward's Whitesmith,
Crown Bob,
Red Champagne,
Warrington,
Laurel,
Ironmonger,
Early Sulphur,
Green Gage,
Green Walnut.

Raspberries.

Red Antwerp,
Knevet's Giant,
Fastoff,
Yellow Antwerp.

Strawberries.

Large Early Scarlet,
Boston Pine,
Hovey's Seedling.

The following list was adopted by the convention as new varieties, which "give promise of being worthy of being added to the list for general cultivation":—

Plums.

River's Favorite,
St. Martin's Quetsche,
McLaughlin.

Pears.

Beurre d'Ajou,
Doyenne Boussock,
Manning's Elizabeth,
Doyenne's d'Ete,
Striped Madeleine,
Duchess d'Orleans,
Pratt,
Paradise d'Automne,
Van Assene,
Jalouse de Fontenay Vendee,
Chancellor,
Ananas d'Ete,
Brandywine,
Ott.

Strawberries.

Burr's New Pine,
Jenny's Seedling.

Apples.

Early Harvest,
Large Yellow Bough,
American Summer Pearmain,
Summer Rose,
Early Strawberry,
Gravenstein,
Fall Pippin,
Rhode Island Greening,
Baldwin,
Roxbury Russet,
And for particular localities—
Yellow Bellefleur,
Esopus Spitzenberg,
Newtown Pippin.

Pears.

Madeleine,
Dearborn's Seedling,
Bloodgood,
Tyson,
Golden Beurre of Bilboa,
Bartlett,
Williams's Bon Chretien, or
Bartlett,
Seckel,
Flemish Beauty,
Beurre Bose,
Winter Nelis,
Beurre d'Arenberg,
And for particular localities—
White Doyenne,
Gray Doyenne.

Peaches.

Grosse Mignonne,
George IV,
Early York, serrated,
Large Early York,
Morris White,
Oldmixon Freestone,
Cooledge's Favorite,
Bergen's Yellow,
Crawford's Late,
And for particular localities—
Heath Cling,

Plums.

Jefferson,
Green Gage,
Washington,
Purple Favorite,
Bleeker Gage,
Coe's Golden Drop,
Frost Gage,
Purple Gage,
And for particular localities—
Imperial Gage.

Cherries.

May Duke,
Black Tartarian,
Black Eagle,
Bigarreau,
Knight's Early Black,
Downer's Late,
Elton,
Downton.

LECTURE ON BOTANY.

On Monday evening week, Mr. Just delivered his lecture in the Royal Institution, Manchester, before a numerous audience. Having briefly referred to the leading topics of a previous lecture, he noticed the three principles which seemed to rule over all vegetable productions, namely, germination, vegetation, and fructification. Each germ took in, from the influences of such conditions that surrounded it, a material which stimulated vitality, so as to enable this vitality to react upon the material, and give it an organised development. The conditions which called forth such developments were few, while the number of germs was almost limitless both in the sea, in the air, and on land. Germination was the primary and essential principle; replete, however, as the air and water were with germs, the earth was more within the scope of our observation. From what had sprung the verdure of England—her grassy meadows, her golden harvests, her unrivalled fences, and her magnificent forest trees? Seeds which were not flying or floating, but fixed germs, were supplied within themselves with all the requisites for their germination: and were not like the other kind of production, dependent upon external supplies for stimuli to their development. Still the germination of seeds was not irrespective of external conditions. To induce the germs within the seeds to act; three special conditions were necessary: a proper degree of temperature, a free access of air, and shelter from the direct light, with a sufficiency of moisture.

Having entered into a description of the process of germination, the lecturer proceeded to define the process of vegetation. It was distinct from, yet accessory to, germination. It required a different kind of aliment, and thereby built up a different kind of structure; it developed the true axis of growth—downward into the soil, and upward into the air. It comprehended roots, with their appendages in the soil, and stems with their appendages in the air; and consequently it embraced a whole class of organs, running through an indefinite number of modifications, according to the nature of their several species and the different localities in which they were situated. The principle of vegetation continued active for an indefinite period; at first, growth is rapid, and the young plant shoots up apace; by-and-by, a check comes on in the annual shoots, the buds yield less and less developments, and another change takes place in the vegetable system. Fructification, the third and last principle, now ensues, either completing its functions, and exhausting the natural supply of nutriment in one season, as among annuals; or, during the second season of growth, exhausting the accumulation of the first, as among biennials; or otherwise, keeping up a constant supply by drawing annually upon the stores within the plants, and annually replacing them. In the annual plants, the true vegetation was of very short duration, and that of fructification of longer continuance. The whole supply of fecula was exhausted, however, by this last event, and there being no vegetation to supply more, the annual died of pure inanition. With biennials, during the first season, each plant vegetated alone; and during the second, each fructified alone; but during the second year, the store of nutriment being exhausted, the biennial also died of pure inanition; and so also with the perennial, when fructification had exhausted its stock of fecula. Fructification, though dependent upon vegetation, as the latter was upon germination, must have its appropriate organs and developments. Whether of the lowest or most elevated kind, it consisted always of two classes of organs, and two classes of development: fertilization and fecundation must first ensue ere the fruit can set, or maturation take place. The fertilizing organs wear

found in the flowers, while the fruit itself was the terminating organ of the fructifying axis.

Having entered into an explanation of the processes of fertilization, fecundation, and maturation, the lecturer completed his outline of the whole round of the system. Reproduction was the great and grand law of nature: multiplication of life, and the increase of vital enjoyment, the aim of all organization. Death was no evil; it was but the end of an existence assigned to us for which we had no claim, no right of inheritance, beyond the boon of a leasehold from the great Lord of creation. Whatever means multiplied life, extended goodness and increased enjoyment. In natural situations, the causes which influenced the condition of plants seldom varied: occasionally the form and colour of the leaf or of the petals, were found to differ in plants of the same species; but in a few generations, most, if not all the plants produced, reverted again to the type of the species. The influence of conditions upon plants was best seen in those that man cultivated: our monstrous dahlias, our painted pansies, our pencilled carnations and pinks, and other splendid varieties, owed their peculiarities to the care of man; and so it was, also, with vegetables of the kitchen garden, and the green crops on arable land. By constant attention to the conditions requisite for such active developments, our cultivated varieties of cabbage weighed more pounds than the wild natives weighed ounces. The same, also might be said of our carrots, turnips, &c., by constantly encouraging the growth of the best varieties, and by feeding such varieties to the full with aliment proper for increasing their dimensions, we made such plants serviceable and profitable productions for man and beast. In such cultivation there doubtless was a limit; for while we almost entirely suppressed certain properties in plants cultivated, and encouraged others to grow to excess, we impaired the vigour of the plants' constitution, and thereby rendered them liable to disease. This was seen in the most valuable of all esculents at the present time. The potatoe had been awfully affected with a gangrenous disease, which had baffled the powers of the most acute physiologists to account for. At different periods of its growth, and under certain conditions of the atmosphere—chiefly when it was wet and warm for a few days' continuance—this malady made its appearance in black specks, which soon spread over the whole plant, particularly if the moisture and warmth continued, till whole crops had the same blackened appearance as if they had been cut down by frost. The tubers were attacked; gangrenous blotches appeared on the cuticle and epidermis, and, whether in the earth or in the store, the disease went on, until, sooner or later, it had completely destroyed the whole tubers. The disease, however, appeared in no season before the plants had attained their full growth, and the maturation of the tubers had commenced. The only crops which escaped this pestilence were those grown within pure bog-soil, the conservative nature of which seemed not only to preserve the tubers when growing, and within it, but also to communicate to them the power of withstanding its attack afterwards. One lesson we might draw from this fact, namely, that where we had not pure bog-soil in which to plant our potatoes, we should surround them with such dressing and tillage as most assimilated to it in conservative properties. Last year he (the lecturer) placed twelve seedling potatoe plants in pots containing the same kind of soil, but each treated with different kinds of tillage; other seedlings he likewise planted in the ground. On taking up the tubers, at the latter end of the summer, he found every plant more or less infected with disease, except one, which had been liberally treated with fine particles of coal ashes. From this plant he had gathered twelve small well-defined tubers, which he preserved over winter, and

planted last spring in a drill manured with riddled coal-ashes as before. About ten days ago, the crop had been gathered, and though, at that time, more than one-half of the common crop of potatoes close to which the seedlings had grown were diseased, not a blotch was observable upon one single seedling tuber. Strange to say, he counted from one plant 46 well-defined tubers, and though the potatoes in the cellar gathered before the blight came on, and which were free from all taint when gathered, were now to a great extent infected, the seedling store, which was kept close by them, had withstood the attack, and most likely would continue to do so. He intended to plant again next spring, in the same way: using the same seed, in order to discover if a like result would follow. He was aware that coal-ashes, with cinders, &c., were used extensively for tillage in potatoe crops, and that they, like the rest, failed; but then, such ashes were mixed up with night soil, and other refuse, abounding with ammoniacal compounds; whereas the ashes which he had used were select and pure. For healthy growth, the potatoe required a modicum of potass: ammonia pushed the plants to excess, and thereby injured them. Ammonia, within due limits, excited and promoted vegetation; giving a more extended axis of growth, with more numerous and enlarged vegetating organs; but ammonia, in all proportions, retarded germination, and in excess, wholly destroyed it. Further, with regard to manures, it was melancholy to witness, almost everywhere, gross breaches of the natural laws, in their application to tillage on farms and cultivated grounds. We saw guano applied to white crops, while the best farm-yard manure, with its charge of silica, was spread over the ground for green and hay crops.—*Manchester Examiner*.

ON THE DIFFICULTIES AND NICETIES IN THE CONSTRUCTION OF LORD ROSSE'S TELESCOPE.—Dr. Robinson, at a recent meeting in Birmingham of the Society for the advancement of Science, gave a rapid sketch of the steps by which Lord Rosse was led to the construction of his instruments, the difficulties he met with in producing large speculæ of that most intractable and yet beautiful material speculum metal; which while it is as hard as steel, is yet so brittle that a slight blow would shiver it to atoms, and so sensitive to changes of temperature, that the affusion of a little warm water over its surface, not too warm to be disagreeable to the touch, would crack it in every direction. He then gave a sketch of the contrivances by which the leading difficulties were overcome. When describing the mould used, with its metallic bottom of packed hoop iron, he stated, that the plan proposed by Mr. Potter, and now claimed in no measured terms, as originating the entire improvements, had been tried and found utterly unfit for producing the proper surface. Dr. Robinson then gave a sketch of the process of grinding and polishing, and of the adjustments and mechanical suspension of the instruments; and he stated that a deviation of the speculum from the parabolic form at its outside circumference which should amount to the 1-100,000th part of an inch would render it optically imperfect, and that a deviation from the proper focal length of any part to the amount of the 1-1,000,000th part of an inch could be detected. He also stated that Sirius, when seen in it through the light was utterly insupportable to the unprotected eye, so that a person might as well attempt to look at it directly as at the concentrated light of the charcoal points produced by the action of Mr. Gasiot's battery; and the attempt made on one or two occasions by him was followed for several hours by a spot of light varying from intense red to blue, being constantly before his eye; yet, when properly viewed, it was a beautiful sharp bead of intense light.

Mechanics and General Science.

BRITISH SCIENTIFIC ASSOCIATION.

The nineteenth annual meeting of the British Association for the advancement of Science took place in Birmingham in September last. The following is the concluding portion of the President's address—the Rev. T. ROMNEY ROBINSON, of the University of Dublin.

I have left myself but little space to consider how far we have fulfilled the third of our objects,—“to obtain a greater degree of national attention to the objects of Science.” Most assuredly it was needful; for nowhere in the civilized world is less honour paid by a nation to science, though nowhere is national prosperity more connected with its progress, nowhere are heavier penalties paid for its neglect. I do not now refer to the remarkable fact that in Britain only men whose scientific fame fills all Europe were seldom thought worthy of any honorary distinction by their Government. As it relates to themselves, this is of no importance; but it is of deep concern to the honour of this country. The true votary of science loves it for itself: in its possession he has a higher honour, a nobler decoration than man can give. *He* does not require to be bribed to follow it by titles or ribbons,—the baits for meaner spirits, the lure to lower achievements. But he knows that though *he* despises such gauds, those who bestow them hold them precious; and they serve him as a scale by which he finds that great men once placed a Herschel or a Brewster nearly on a level with a third-rate soldier or the annual magistrate of some town that might be honoured with a Royal visit. Nor do I refer to the miserable economy which permitted such men as Ivory and Dalton (to speak only of the dead) to waste, in the drudgery of earning a precarious subsistence, the years, the powers, the hopes which could have borne light into the remotest and darkest recesses of the realms of inquiry; though it does contrast painfully with the munificent provision which republican France and despotic Russia heap on such men when they can find them. Both these spring from the same root;—the gross ignorance in this province of the intellect which up to the beginning of this Association, and long afterwards, prevailed in the land. The industrial classes of our countrymen were wont to rely in their pursuits on the unenlightened dexterity and empirical success which resulted from experience, and to scoff at the idea of learning anything useful from a mere theorist; those whom wealth and independence permitted to choose seldom sought employment or pleasure in this unfashionable region,—their education, though the best then current, having given them very little cognizance of what it might contain. And to ascend still higher, even to the executive and legislative bodies, they “cared still less for science; the tension of political life engrossed all their faculties: they disliked philosophers as meddlers, or despised them as dreamers. The head of a great military department once

said that he *hated* scientific officers! Any one of his engineers might have told him that more money had been wasted and lives lost in that department from sheer ignorance of science than any one could think of without shame and sorrow. The question which I know to have been asked by another in “high places,” though milder in expression, was not less scornful—“Of what use is science?” He who asked it ought to have known better. Whatever tends to raise man above low and sensual pursuits,—whatever to lead him from the partial and present to the general and the future,—whatever to exalt in his mind the dominion of order and the supremacy of truth,—that must be useful to the individual, useful to the nation. Even had he been incapable of rising above the gross measure of pecuniary value, he ought to have been able to give a mighty answer to his own inquiry. There is not a single element of our commercial prosperity in which the vivifying power of science might not be felt, in which the loss arising from want of that certainty of action which mere unenlightened practice can never attain, does not reach an amount which, if stated in figures, would astound the most thoughtless. For instance, the causes which in our great cities hasten the death and debase and embitter the life of so many, have at last been forced by chemists and physiologists on the notice of the public. Look at Dr. Smith's report on the Air and Water of Towns, in this volume; and when we think that the victims of the deadly influences which are there revealed are chiefly found among the people whose industry is the foundation of our greatness,—that every year cut off from the life of each of these is so much subtracted from national wealth,—even were all moral sense or religious feeling dead in us, we must confess that the knowledge which is capable of averting them “is of use.” The ships that bear the treasures produced by this industry through the world are lost to a fearful amount,—nearly *three* daily. What are they worth,—ship, cargo, men?—and most of them perish from want of nautical science or from unscientific construction. How many men have been ruined by searching for minerals, when the merest smattering of geology would have dispelled their delusion? On the other hand, the agricultural produce of our islands might be doubled by a more perfect application of the principles of botany and chemistry. The manufacture of iron has been augmented sixfold by the use of the puddling furnace and the hot-blast,—both gifts of theory. How gigantic a result is this, without reference to the increase in the thousand arts of which this immense supply of that most precious of metals is the exponent. The splendid machinery in which we excel, the world owes its present perfection to mechanicians who are conspicuous in *our* Sections, to impulses given by philosophers like Willis or Babbage. Nay, the steam-engine itself, your immortal town's-man's great conquest,—that earthly Fate to which now seems to be committed the weaving of the world's destiny,—that itself was a pure induction of science:—and beyond *that* I need not go. But we live in better times; for no statesman

now would be so imprudent as to ask such a question, even were there any so unfortunate as to think it,—which I trust there are not. And this change we, the British Association, have in no small degree helped to produce. We have carried far and wide through the land the light which before beamed only from a few scattered points; if our meteor-like presence be short, it is also bright,—and as the meteor is remembered when the stationary lamp is unheeded, so I trust that of the tens of thousands who have felt our influence few will forget the impression which it made on them, and fewer fail to feel that this impression ennobled and exalted their understanding. It is evident that science now has a far more powerful hold on public opinion than when we began our course. No other proof is needed of this than the fact that many new branches of it are finding their way into the course of University instruction. Without referring to the recent changes in those of this island, I rejoice to say that in my own—that of Dublin—within the last year, Chemistry, Thermotics, Electro-Magnetism, and others, have been made a portion of the under-graduate course; while one of our own valued members has introduced into primary schools a manual of Zoology, of which the spirit is as good as the substance is attractive. But there is another evidence, not less satisfactory, in reference to this our third object, and I name it with pleasure,—the prompt and liberal attention which our Government now pays to the requests of the Association. It is true that we have never applied to it except for matters of paramount importance and unquestionable usefulness; but in times past it would have been no easy matter to force a conviction of this on the guardians of the Treasury; and we may therefore feel assured, not only that they personally take an interest in what we bring before them, but also that the whole nation sympathizes with us;—for some of these concessions are of no ordinary magnitude. The completion of the Ordnance survey of Scotland—the enlarging the scale of part, perhaps all, of that of England—and the adding lines of level to that of Ireland after it was apparently completed—are very formidable items in a budget. At our demands the Observatories from which such splendid additions have been made to our knowledge of Magnetism and Meteorology have been established far and wide throughout our dominions:—a precious gift, not only for itself, but for what it has produced. The example was followed, on their usual princely scale, at four stations by the East India Company, (always, be it said, munificent patrons of science,) and still more extensively by Russia—with what success must be fresh in the memory of those who were present at the Magnetic Congress. We obtained the Antarctic Expedition of Ross, so fertile in its geographic fruit—so invaluable for the wide extension which it gave to the domain of terrestrial magnetism. We procured the expenditure of large sums for the reduction of the Greenwich lunar observations, and for publishing the Catalogues of Lacaille and Lalande,—and much more which I need not recite. Yet,—and we well may reckon it a sign of progress,—not a single voice has been

raised in opposition to these grants. It seems as if our country recognized in us its scientific representatives,—as if we were like the Saxon prototype of its great council: its Witen-Gemot—its assembly of the Wise.

And may we deserve that name; for let me remind you that science is not necessarily wisdom. To know, is not the sole nor even the highest office of the intellect; and it loses all its glory unless it act in furtherance of the great end of man's life. That end is, as both Reason and Revelation unite in telling us, to acquire the feelings and habits that will lead us to love and seek what is Good in all its forms, and guide us by following its traces to the First Great Cause of all, where only we find it pure and unclouded. If science be cultivated in congruity with this, it is the most precious possession we can have—the most divine endowment. But if it be perverted to minister to any wicked or ignoble purpose—if it even be permitted to take too absolute a hold of the mind, or overshadow that which should be paramount over all, the sense of duty, the perception of right—if it does not increase in us the consciousness of an Almighty and All-beneficent presence,—it lowers instead of raising us in the great scale of existence. This, however, it can never do but by our fault. All its tendencies are heavenward;—every new fact which it reveals is a ray from the origin of Light, which leads us to its source. If any think otherwise, their knowledge is imperfect or their understanding warped or darkened by their passions. The Book of Nature is, like that of Revelation, written by God, and therefore cannot contradict; both we cannot read through all their extent, and therefore should neither wonder nor be alarmed if at times we miss the pages which reconcile any seeming inconsistency. In both, too, we may fail to interpret rightly that which is recorded; but be assured, if we search them in quest of truth alone, each will bear witness to the other,—and physical knowledge, instead of being hostile to religion, will be found its most powerful ally, its most useful servant. Many, I know, think otherwise; and because attempts have occasionally been made to draw from Astronomy, from Geology, from the modes of the growth and formation of animals and plants, arguments against the divine origin of the Sacred Scriptures, or even to substitute for the creative will of an intelligent First Cause the blind and casual evolution of some agency of a material system, they would reject their study as fraught with danger. In this I must express my deep conviction that they do injury to that very cause which they think they are serving.

Time will not let me touch further on the cavils and errors in question; and besides, they have been often fully answered. I will only say, that I am here surrounded by many matchless in the sciences which are supposed so dangerous, and not less conspicuous for truth and piety. If they find no discord between faith and knowledge, why should you or any suppose it to exist? On the contrary, they cannot be well separated. We must know that God is, before we can confess them;—we must know that He is wise and powerful before

we can trust in Him,—that He is good before we can love Him. All these attributes, the study of His works had made known before He gave that more perfect knowledge of himself with which we are blessed. Among the Semitic tribes his names betoken exalted nature and resistless power; among the Hellenic races they denote his wisdom; but that which we inherit from our Northern ancestors denotes his goodness. All these the more perfect researches of modern science bring out in ever-increasing splendour; and I cannot conceive anything that more effectually brings home to the mind the absolute omnipresence of the Deity than high physical knowledge. I fear I have too long trespassed on your patience, yet let me point out to you a few examples. What can fill us with an overwhelming sense of His infinite wisdom like the telescope? As you sound with it the fathomless abyss of stars, till all measure of distances seems to fail and imagination alone gauges the distance; yet even there as here is the same divine harmony of forces, the same perfect conservation of systems, which the being able to trace in the pages of Newton or Laplace makes us feel as if we were more than men. If it is such a triumph of intellect to trace this law of the universe, how transcendent must that Greatest over all be in which it, and many like it, have their existence! That instrument tells us that our globe and we are but a speck, the existence of which cannot be perceived beyond our system. Can we then hope that in this immensity of worlds we shall not be overlooked? The microscope will answer. If the telescope lead to one verge of infinity, it brings us to the other; and shows us that down in the very twilight of visibility the living points which it discloses are fashioned with the most finished perfection,—that the most marvellous contrivances minister to their preservation and their enjoyment,—that as nothing is too vast for the Creator's control, so nothing is too minute or trifling for His care. At every turn the philosopher meets facts which show that man's Creator is also his Father,—things which seem to contain a special provision for his use and his happiness:—but I will take only two, from their special relation to this very district. Is it possible to consider the properties which distinguish iron from other metals, without a conviction that those qualities were given to it that it might be useful to man, whatever other purposes might be answered by them? That it should be ductile, and plastic while influenced by heat, capable of being welded, and yet by a slight chemical change capable of adamant hardness,—and that the metal which alone possesses properties so precious should be the most abundant of all,—must seem, as it is, a miracle of bounty. And not less marvellous is the prescient kindness which stored up in your coal-fields the exuberant vegetation of the ancient world, under circumstances which preserved this precious magazine of wealth and power, not merely till He had placed on earth beings who would use it, but even to a late period of their existence, lest the element that was to develop to the utmost their civilization and energy might be wasted or abused. But I must conclude with this summary of

all, which I would wish to impress on your minds—that, the more we know His works the nearer we are to Him. Such knowledge pleases Him; it is bright and holy, it is our purest happiness here, and will assuredly follow us into another life if rightly sought in this. May He guide us in its pursuit; and in particular, may this meeting which I have attempted to open in His name, be successful and prosperous,—so that in future years they who follow me in this high office may refer to it as one to be remembered with unmixed satisfaction!

IMPORTANCE OF SCIENTIFIC KNOWLEDGE TO PRACTICAL MEN, AND OF PRACTICAL KNOWLEDGE TO SCIENTIFIC MEN, BEING THE SUBSTANCE OF A LECTURE DELIVERED LAST WINTER BEFORE THE MECHANICS' INSTITUTE IN TORONTO, BY J. HURLBURT, M. A.

(Concluded from page 273.)

We are placed in a world where a vast multitude of objects—animate and inanimate—arrest our attention. Whether we walk abroad upon the surface of the earth amidst its mountains and valleys, its forests and plains, or penetrate into its bowels, or examine its oceans and rivers, or turn our eyes to the surrounding atmosphere and the vault of the starry heavens,—we are overwhelmed by the contemplation of the immensity of the works of the Almighty, differing not more in their number than in their variety, from the atom to ponderous worlds, from the insect sporting in a drop of water through all the gradations of animate life up to man and to angels. Science is a knowledge of the laws which govern the material and immaterial worlds. These laws can be ascertained only by the discovery of a vast number of facts; from observations, comparisons and deductions, by observers placed in various circumstances and positions. All science, indeed, may be reduced to facts, and, therefore, every man whose organs of sensation are in a sound state, is capable of observing the elements of science. That one man excels another in the discovery of truth, is chiefly owing to his mind being more particularly directed to the contemplation of certain objects and relations. Many important scientific facts require only a certain combination of circumstances. If at the time of the observance of a fact, the attention has been directed to subjects connected with that fact, it may lead to important discoveries. All facts occur in accordance with some established law of nature; such fact is, therefore, an illustration of that law, and may lead to its discovery. An accidental experiment of a boy led to the invention of the telescope. The observance of the fact that water could rise to only 32 feet in a vacuum—led to the discovery of the weight of the air, the construction of the barometer, and the true principles of the pump. The swinging of a chandelier attracting the attention of Galileo at a time when his thoughts were directed to similar subjects, resulted in the discovery of the principles of the pendulum. The falling of an apple at a favourable moment, directed Newton's thoughts to the laws of gravity, and the mo-

tions of the heavenly bodies. But these and similar facts had been observed from the creation millions of times. Why not with the same result? Water had risen in vacuums: bodies had vibrated in the air; apples had fallen from the plucking of the fatal one in Paradise till the fall of the fortunate one which awakened the "patient thought" of the Great Philosopher. The facts had been witnessed, but the causes which produced them had not been sought after.

How often, indeed, do we tread upon the very threshold of the *arcana* of nature, the most important discoveries, or the richest mines of intellectual wealth, without being conscious of our proximity to them. Like the rich mines of our vast Continent, which have for ages, been trodden under the foot of the untaught aborigines, undiscovered, or when disclosed, their value unknown; but when sought for by the patient intelligent observer, they are found. As the explorers multiply, new mines of increased wealth are brought to light, until the discovery of a gold mine excites no more astonishment than the passing events of the day. Let the observers of nature be multiplied from a few to thousands or millions, and who could predict the glorious result. Let the continents and the islands, the water and the land, on their surface and in their depth, be filled with anxious inquirers into the secrets of nature; let them question her closely, and she will reveal ten thousand wonders more marvellous than those already known. An ample field for discovery still remains. The sciences are as yet far removed from perfection; they are but in their infancy; many of them have but just begun their progress; the elements of others are still uncertain or undiscovered. The researches of ages may be necessary to give them symmetry and beauty. Of this we have an illustration in the history of science. In those ages when only a few solitary individuals directed their attention to such pursuits, little or no progress was made in the various departments of science. But when the human mind arose from its slumber and burst its fetters, and the number of rational investigators began to increase, science and art were accelerated in their progress. When the Academy of Sciences in Paris, and the Royal Society of London were established, some of the sciences of the present day had no existence in name. Similar societies soon sprang up in different parts of Christendom under the name of "Literary Associations," "Society of Arts," "Mechanics' Institutes," &c. These have brought together the scattered fragments, the facts, the elements of truth, and consolidated them into the form of well arranged sciences.

Nor let it be objected that the great bulk of mankind are incapable either from want of time or ability, of making discoveries. All have the same senses and the same powers of reasoning; and the great book of the universe, from which all discoveries have been made, is equally open to all, from the peasant to the king. We cannot open our eyes, we cannot step, or breathe, without being surrounded with mysteries more mysterious, and truths more profound, than those which have ever

yet been revealed to the mind of mortal from the volume of nature.

Let inquirers go forth; let men engaged in the practical pursuits of life be conversant with science, and let scientific men become students of nature, and a new and vigorous impulse will be given to every department of science. The vast universe has never yet been thoroughly explored; we have but commenced the search; we are only sporting with the pebbles upon the shore of the boundless ocean of undiscovered truth. We have carelessly examined a few grains of sand upon the surface of our globe, but its depths remain unexplored; we have caught a glimpse of the nearest of the heavenly bodies, but the vast wilderness of worlds lie beyond the reach of the most powerful glasses. Descending to the manifold and diversified creatures which swarm the earth, how little is known of their nature and relations, and how imperfectly that little. Of things animate and inanimate, too minute or too remote for the eye or for glasses, all are inwrapped in impenetrable mystery; and of things visible how imperfect our knowledge beyond the declaration of Holy Writ, that God is their Author. That Author—the Infinite Perfection—how immeasurably beyond our comprehension!

Till the universe in all its aspects, so far as it lies within the range of human inspection, be more thoroughly explored, uncertainty will continue to rest upon many interesting departments of knowledge, and many of our most specious theories in the sciences must be considered as being built upon slender and unstable foundations. The propensity to theorize without facts, has led to all the errors and conflicting hypotheses with regard to both mind and matter. The observance of fact is too slow a process; the formation of theories is more in accordance with our impatience. Consequently theory has been reared upon theory, and system upon system; each obtaining its admirers and period of applause, till subsequent discoveries have swept them away as a dream or vision of the night. The crystalline spheres with which Ptolemy had enclosed the heavens, are dashed to pieces; the vortices of DesCartes have long since ceased their whirling; the earth which Tycho—the Danish astronomer—placed in the centre of the universe is now in rapid motion through the skies; the abyss of water with which Burnett filled the centre of the earth, is now converted into a mass denser than the solid rock; the subtle ether which formerly accounted for so many phenomena, has become electricity and heat; the four elements of the ancients have multiplied into sixty; and the sparkling diamonds in the heavens, have become ponderous worlds or centres of systems. Such will be the fate of all theories not founded upon fact. They will perish by their own intrinsic infirmity. The human mind, too impatient to collect facts, leaps at the conclusion by some bold theory. The period has not yet arrived when any material portion of the human family devote their attention even partially to science; the great body of mankind still suffer their faculties to lie in a state of langour and inactivity, and those who are more vigorous, are too much

engrossed in commercial speculations, in grasping at power and opulence, or in the indulgence of sensual gratifications, to think of attending to the interests of science, and the progress of the human mind. Much, however, might be accomplished by various classes of society, without interfering with their ordinary avocations, if their attention were directed to such pursuits. Miners, in descending through the crust of the earth, might learn much of its structure and the strata through which they pass. Sailors, in traversing the ocean, and ascending the streams of the various portions of the globe, have excellent opportunities for observing the phenomena of the waters, the atmosphere, the heavens, the animals, the plants, and the inhabitants peculiar to the climates and countries which they visit. But thousands of such persons can sail "twice from Indus to the frozen pole, as ignorant as their log and stubborn as their compass," without making any scientific discovery. The observations made during one voyage across the Atlantic by a single intelligent observer—Humbolt—are of more value to the scientific world than the observations of ten thousand others, who for thousands of years, have traversed the same oceans. Yet these possessed the same sentient organs, the same intellectual powers, and the same opportunities for collecting facts as that distinguished philosopher. And did such observations make Humbolt a worse member of society? Did they make him less active, less intelligent, less virtuous, less humane, less happy? Nay, instead of disqualifying the mind for official duties, such observations would tend to invigorate it, and prevent that languor and *ennui* which result from mental inactivity, while they furnish a source of intellectual enjoyment amidst the heaviest cares of life.

Mind and matter are the subjects of all our knowledge. The observation of facts is the only true path to such knowledge. The course pursued by children is our safest guide in the study of nature, whether in the phenomena of the external creation, or in the powers and operations of the human mind. That course is the observation of fact—which is the food of thought. This does not exclude the judicious use of books containing a record of the observations and discoveries of others. They are, indeed, not the necessary but the most useful instruments to guide the steps of the student. But books can be no guide to the unexplored regions of the vast domain of God. The "Traveller's Guide" may serve us as far as the author himself has gone. But the object of our search may be the unknown and unseen, where there can be no "guide." What then is to direct us in our inquiries? It is the patient study of the works of nature—of mind and matter. What guide could Columbus find to direct his course to an unknown world? What "traveller's guide" had Cook over the widely extended waters of the Pacific? What guide had Pythagoras, Copernicus, Kepler, Galileo, and Newton in their travels through the skies? What guide directed Bacon to the true method of Philosophy? What guided Locke into the mysterious labyrinths of the human mind? What has ever guided to any new

discoveries? It was the study of nature as displayed by Infinite Wisdom, above, around and beneath us, and in that inner world in our own bosoms. Facts are the materials with which the temple of Science has been erected—not upon the sands and shoals of a purely ideal theory or hypothesis, but upon the rock of well established facts. But these facts collected from the various parts of the works of God, must be the subjects of patient thought, to ascertain their influence upon each other, their relations, and the consequences to be deduced therefrom. The purpose which food well digested serves in nourishing and expanding the corporeal system, facts *well digested* by reflection serve in invigorating and enlarging the system of science. The rude materials must be incorporated into—*assimilated to*—the old system, thus making all our symmetrical whole without destroying the identity of the system of science. Truth, like its Author suffers no change: it is "the same yesterday to-day and forever." The *laws of nature* are but the established means through which God manifests himself, or in other words, carries on his works; and as their Author is without "variableness or shadow of turning," so his laws, which are his attributes in action, are immutable. In those laws there may be variety beyond our highest powers to compute, as the Wisdom of their Author is infinite; but there is no incongruity, no want of symmetry, no jarring sound throughout the infinitude of his works; they are but the channels for the outflowing of that Divine plenitude, and the streams must partake of the nature of the fountain whence they flow. As the laws of nature so called, are but God in action, we have the highest assurance that every occurrence is a necessary part of the whole, a link in the chain, and may lead to undiscovered truth, or unascertained laws. And the part yet explored is but as the drop compared with the ocean. There are subjects of inquiry diversified enough for every variety of taste, adapted to every order of intellect, and profound enough for the most comprehensive understanding, in the infinite extent and undiscovered phenomena of the heavens, in every part of the visible creation teeming with life, in the unsolved problems of the material world, in the undeveloped and unapplied powers of the magnet, of electricity, of galvanism, of light and heat, of steam and mechanics, and, in short, in the attributes of mind, in the realm of morals, and in the deep and varied passions of the human soul. Here the most ardent thirst for knowledge may be allayed from the never failing fountains of nature. The philosopher never looks forward to the period when he is to see all that is to be seen, and know all that is to be known, and possess all that is to be acquired. He cannot, like Alexander, weep for more worlds to conquer. The realms yet unsubdued, the mysteries unconquered, enclose him on all sides, inviting him to peaceful yet delightful triumphs. As the student of nature stands at the base of the hill of science, his horizon is circumscribed, but as he ascends, the field enlarges, until the mind, in its widest excursions, can catch a glimpse of the undiscovered land, a ray from off the wished-for shore.

The unchangeable character of their Author is stamped upon all his works. That uniformity, that resemblance to itself which exists in the works of nature through all times, climes and circumstance, must excite the most agreeable emotions of astonishment in every reflecting mind. The bee is the emblem of industry and skill now as it was thousands of years ago; the ant of prudence; the dove and the lamb of innocence; the eagle is still noted for its lofty flight and carnivorous habits; the lion and tiger for ferocity; the horse, the cow and the sheep, serve the same purposes still for man; the germination and growth of the plant is still the same; day and night; seed time and harvest; the earth for thousands of years teeming with the same animate existences and with food for their support; the unchanging aspect of the heavens; that divine order and harmony in their revolutions, so perfect that no one body amongst the countless millions of orbs ever impinged upon another; no part of the vast machinery ever goes wrong; the sun for so many ages the source of light and heat to his attendant worlds, rises with the same ruddiness, ascends the heavens with the same majesty, and shines with the same brilliancy, as upon that morn when "God said let there be light," "and the morning stars sang together and the sons of God shouted for joy." Every truth already known, every observed fact, may lead to undiscovered truth, and to principles having the most important bearing upon the destinies of man.

The influence of sciences upon morals remains to be briefly considered. If the comparative influence of knowledge and ignorance upon morals and religion, were subjects admitting of discussion, they would give rise to questions of the weightiest importance. For if ignorance be favourable to virtue, then, the grosser the ignorance, the more powerful the virtuous influence; if ignorance be favourable to virtue or promotes it, then it is unfortunate that man is created with a thirst for knowledge, and powers capable of knowing and understanding the works of his Creator; it is unfortunate that from the cradle to the grave his knowledge must increase; then truly God's "ways are not equal" in so constituting us that we must necessarily grow wiser; better that we were doomed to be idiots. But this supposition is absurd and leads to absurd consequences. There can be no virtue or religion without knowledge. Virtue, in its highest sense, is an *intelligent* observance of the divine law. Virtue is not passive but active; it is not a blind or unconscious performance of the right. There must be a knowledge of the law; knowledge of the relations between man and man, and between man and his Maker, and of the obligations arising out of such relations.

It is nevertheless true that their is not always a fixed proportion between intellectual and moral growth. Distinguished talents and high attainments are sometimes connected with obliquity of character. The intellectual powers may be unduly developed to the neglect of the moral; but the strengthening of some faculties does not weaken those which lie dormant. The whole being should be fully and equally developed—mental,

moral and physical,—and each would exercise a favourable influence over the others. The opinion that learning is unfavourable to morals and religion, or from the character of the French philosophers. But causes which time would fail to point out, had subverted the foundations of virtue and piety in France; of these the corruption of true religion was the most powerful. But their immorality and infidelity were not produced by their philosophy, but in *spite* of it. In France there was no general diffusion of knowledge, no correct religious instruction, no wholesome public opinion; the press and the pulpit were corrupt. "Darkness covered the land and gross darkness the people." But we cannot reason from isolated facts. The question concerns general influences and general tendencies. It must be argued from man's constitution and the constitution of the works of God around him; from the nature of virtue and the nature of knowledge; and from the history of individuals and of nations. That learning is unfavourable to morality or religion, none would assert. The question, if any there be, is whether learning exerts a direct influence upon morality and religion, and to what extent. And if that influence be propitious, then the more comprehensive and varied the knowledge, the more powerful the virtuous influence. "A little learning" says Pope "is a dangerous thing;—shallow draughts intoxicate the brain." Pope's poetry is better than his philosophy. No knowledge, however small, of the works and ways of Providence, can be detrimental. Knowledge, it is true, is not virtue, although virtue presupposes knowledge. But they cannot be separated. Both are attributes of the only perfect Being, towards whom his intelligent creatures are designed even to tend. His wisdom, as well as his goodness, is a pattern—a glorious pattern—for our imitation. We can study the Great Architect in every part of the gorgeous and stupendous temple of the universe, as we can study the skill of the architect in St. Paul's or St. Peter's Cathedrals of modern times, or in the Pantheon or Mausoleum, in the temples of Apollo, or Diana, or that of the eternal God at Jerusalem, or the Pyramids of ancient times. God has spread around us subjects of contemplation with all the profusion of infinite wisdom, and when the mind is lost in the contemplation of the distant, the great, the incomprehensible, it can return and contemplate its own frame, curiously and mysteriously wrought in the deep recesses of nature by the hand Divine. Man is not like the beasts that perish. His better part is not to return to the dust. It is a spark of that Divine intelligence, a ray of Divinity, by which and through which he bears a resemblance to the Eternal. Man is formed to think, and reason and will. He can survey God in his primeval works, contemplate him in his Providence, and rejoice with him in his love. Knowledge unseals the book of nature and leads man to an acquaintance with its author. As he turns its pages, every line bears the traces of Infinite Wisdom, Power, and Goodness. In the creation and preservation of the world he beholds the display of Divine power; in every part of it he sees the perfect adaptation of means to the accom-

plishment of the Divine purposes. He who studies the book of nature and the book of revelation, must behold with adoring gratitude, their perfect harmony, their common origin. One generous science leads him through the strata of the earth, and to the rugged mountain, where he studies the fossil remains of monsters of a period beyond the flood, and deluvial deposits, clearly indicating a universal deluge neither more remote nor nearer than the time spoken of in Sacred Writ. Thus the elder Scripture writ by the Divine hand, accords with revelation. The history of man, his condition, traditions of all nations, &c., point to the truth of the great facts recorded in the Mosaic account, the period and circumstances of the creation, the fall, the deluge, the confusion of tongues, the dispersion of the descendants of Noah, the call of Abram and the establishment of the Jewish nation, their destruction, &c.

Turning to the animal and vegetable kingdoms, science leads us to a knowledge of innumerable facts, illustrative of the wisdom, power and goodness of their author. Natural theology—the demonstration of the existence and attributes of their Creator from an investigation of his works,—is the greatest achievement of a finite understanding. In every thing—the great and the small—we behold the skill of the Divine Architect. His impress is left upon all his works. The adaptation of light to the eye; sound to the ear; and the properties of external objects to all the senses; the wonderful mechanism of the hand to execute what the ingenuity of the mind may devise; the fins of the fish; the wings of the bird; and the limbs of land animals, adapted to the elements in which they are formed to move; the organs of respiration, of speech, and of motion, for the performance of their several functions; these and a multitude of other facts, were pointed out even by heathen philosophers as proofs of the existence of an intelligent first Cause. That same power which causes the leaf and the drop of water to teem with myriads of animalcula, must be every where present throughout infinite space, creating, upholding, and guiding all things to their final end. to the accomplishment of his Divine purposes, Well has it been said—

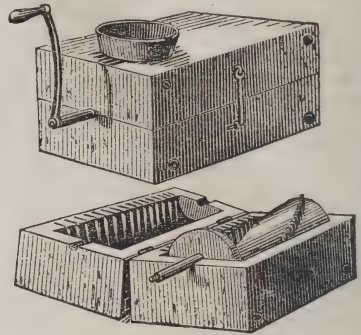
“The undevout philosopher is mad.”

AGRICULTURAL SURVEY OF NEW BRUNSWICK.—Professor Johnston, who is now engaged in making a tour of the Province with the view of ascertaining its agricultural capabilities, accompanied by Professor Robb of King's College, Fredericton, and James Brown, Esq. M.P.P., arrived in town last evening from Sussex Vale. —*St. John's Courier.*

NEW SAUSAGE OR MINCING MACHINE.

The season for making sausages being at hand, we present our readers with a cut and description of a machine for preparing the meat, much used in the New England States. The price is too great to allow of its use becoming general; but where sausages are made for market, it may be

an object to provide a machine of this kind.—They may be had at Rochester, N. Y. We take the following from the *Genesee Farmer*:—



New Sausage or Mincing Machine.

One machine, by the power of a man, is capable of cutting readily from 80 to 100 lbs. of meat per hour—the person turning the crank feeding the machine, thus leaving the mass cut sufficiently fine and uniform.

It is constructed of blocks of hard wood about five inches thick, nine inches wide, and fifteen inches long, connected together by hinges and hasps. The two faces of the blocks are carved or bored out so as to form a hollow cylinder or barrel extending through the length of the blocks, excepting enough at each end to form a head or cap. In this cavity is suspended a wooden cone on an iron shaft, running lengthwise, and one end of the shaft extending through and connecting with a crank outside. In this cone are placed three rows of wood or iron pegs, so arranged spirally as to form a kind of screw, running lengthwise—the pegs being smaller, shorter, and closer together as they approach the large end of the cone—making the mean diameter of the pegs the same at each end of the cone, and just filling the space or cavity. Each block has a set of triangular knives fixed stationary, and so as to allow the pegs to pass between them.

The process is simply putting in the meat at the small end of the cone, through the kind of hopper or funnel, and by turning the crank the meat is passed round, through and between the knives, and forward to the large end of the cone by the combined action of the pegs and knives, and finally discharged through an aperture in the bottom at the large end of the cone or opposite the hopper end—the fineness being gauged by the size of this discharging aperture.

The machine is warranted to cut fit for use from 80 to 150 lbs. per hour, according to the power applied—one man being sufficient to turn it constantly. Several hundred have been sold during the past two years, and given entire satisfaction. A good machine, warranted, can be afforded at from \$12 to \$15—and may be obtained at Mr. Emery's warehouse in Albany, or at the depot in Rochester.

